Plan To Be Ready:

A Guide for Training Non-Public Health Workers To Respond to Public Health Emergencies

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A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies

In 2004 Public Health Services of the Montgomery County, Maryland Department of Health and Human Services became one of the first eleven public health agencies in the nation to be recognized as Public Health Ready by the National Association of County and City Health Officials (NACCHO) and the Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services. The county is home to one of eight Advanced Practice Centers (APCs) for Public Health Preparedness funded by NACCHO through the CDC. The Montgomery County APC developed the *Plan to Be Ready: A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies* in conjunction with the Johns Hopkins Center for Public Health Preparedness at the Johns Hopkins Bloomberg School of Public Health.

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A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies

How to Use the Toolkit

This toolkit is designed to help local public health agencies and others conduct public health preparedness training for non-public health workers.

The toolkit provides you with all of the materials and information that you will need to provide basic training on emergency preparedness. The toolkit includes:

- Basic principles in emergency preparedness
- Training guides for each training topic
- Tips on how to conduct effective training sessions
- CD ROM with the information on each training topic
- Sample pre and post tests
- Sample evaluation forms
- A training video - "Operation Dagwood: A Smallpox Vaccination Clinic

The Montgomery County Health Department worked very closely with the Johns Hopkins Center for Public Health Preparedness to adapt the materials in this guide to meet the needs of their staff. The result is the presentation that you will find in section ten of this Guide. In order to get the most out of this resource, you are encouraged to tailor the contents of this Guide to make it relevant to your staff.

The following are a several comments from trainings conducted using these materials:
"Good information to share"
"Very informative and educational"
"It was very informational for me and made me aware that I don't have an emergency plan for my family and in these days and time, I need one"
"This info is important for <u>everyone</u> in the County"

A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies

How to Use the Toolkit, continued

Toolkit Resource CD ROM

The CD ROM contains all of the training materials included in the toolkit. At the end of each section there are instructions on how to create a short version presentation. People have very limited time to participate in trainings, sometimes making it necessary to streamline the information that you present to them.

To create the short version presentation:

Several of the presentations can be turned into short version presentations. To do this, go to the **view** menu, select the **slide sorter** view. All of the slides in the presentation should be visible. Select the slide(s) that you wish to delete and push the delete button. Use the guides at the end of each section to determine which slides can be deleted to create this shortened version of the presentation while still keeping the core content of the subject matter.

Creating Presentation Handout

You should always provide handouts to the participants of your training program. This will give them something to refer to after the training. To do this, in PowerPoint, go to the **File** menu, click **Print**, go to the drop down menu that says **Print what** and select the choice for **handout**. When you select this link, this will allow you to choose the number of handouts per page that you which to use. It is recommended that you select no more that 6 slides per page so that that can be easily read. You should also choose whether you want to slide to be printed in color or in black and white. After you have made all of your selections, click okay.

You are also encouraged to further adapt the presentations to include information relevant to your audience.

For more information on the Plan to Be Ready Guide please visit: www.montgomerycountymd.gov/apc

2. Getting Started

A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies

Getting Started: How to Conduct a Training

Here are some things to consider when planning a training session:

☑ **The Location** - It will be important to find an appropriate location to host your training. Consider the special needs of your audience. Is the location easily accessible to the majority of people that will be participating? Is the room conducive to learning?

☑ **The Subject** - give consideration to the possibility of receptivity of your audience regarding the subject matter contained in the training program. For some, the subject of preparing for a bioterrorism or other emergency event can be unsettling; you will need to be prepared to find ways to reach these individuals.

☑ **Active Learning** - Develop or use existing exercises that encourage active participation of the audience; getting involved in an exercise can help to create a sense of reality to a difficult subject. For example, use disasters that participants can identify with in their local areas as examples to illustrate key points related to program objectives.

☑ **Evaluation –** It is important that you evaluate the effectiveness of your training. A sample evaluation form has been included for you to use and to adapt to meet the needs of your audience. Another way to evaluate your trainings is by administering pre and post test for each lecture. These tools can easily be designed. A sample test of one of the trainings has been included in this Toolkit.

☑ **Training Logistics**

• Have the appropriate equipment available (LCD, microphone, computer, TV, speakers, podium, etc.) and test to make sure that it works beforehand.
• If possible, consider providing food as an incentive to attend the training.
• Consider offering continuing education credits as an incentive.
• If appropriate, consider making the training “mandatory.” It is important to get as many people as possible involved in emergency preparedness and response activities.
• Have a high level representative from the health department and from the agency where you providing the training. This will show participants the importance of the training.

3. General Information-Public Health Preparedness

A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies

Public Health and Emergency Preparedness and Response

What is public health?

Public Health[1]
- Prevents epidemics and the spread of disease
- Protects against environmental hazards
- Prevents injuries
- Promotes and encourages healthy behaviors
- Responds to disasters and assists communities in recovery
- Assures the quality and accessibility of health services

The 10 Essential Public Health Services

Monitor health status to identify community health problems.
Diagnose and investigate health problems and health hazards in the community.
Inform, educate, and empower people about health issues.
Mobilize community partnerships to identify and solve health problems.
Develop policies and plans that support individual and community health efforts.
Enforce laws and regulations that protect health and ensure safety.
Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
Assure a competent public and personal health care workforce.
Evaluate effectiveness, accessibility and quality of personal and population-based health services.
Research for new insights and innovative solutions to health problems.

[1] This information on public health was taken from *Public Health in America* a project of Public Health Functions Project that provides materials of interest to various audiences regarding public health infrastructure. The Public Health Functions Project ended in 1999. It was coordinated by the Office of Disease Prevention and Health Promotion, Office of Public Health Science, Office of the Secretary, U.S. Department of Health and Human Services, and brought together the Public Health Service agencies and national public health organizations to strengthen the public health infrastructure of the nation.

A Guide for Training Non-Public Health Workers to Respond to Public Health Emergencies

Public Health and Emergency Preparedness and Response

What is the role of local public health in an emergency event?

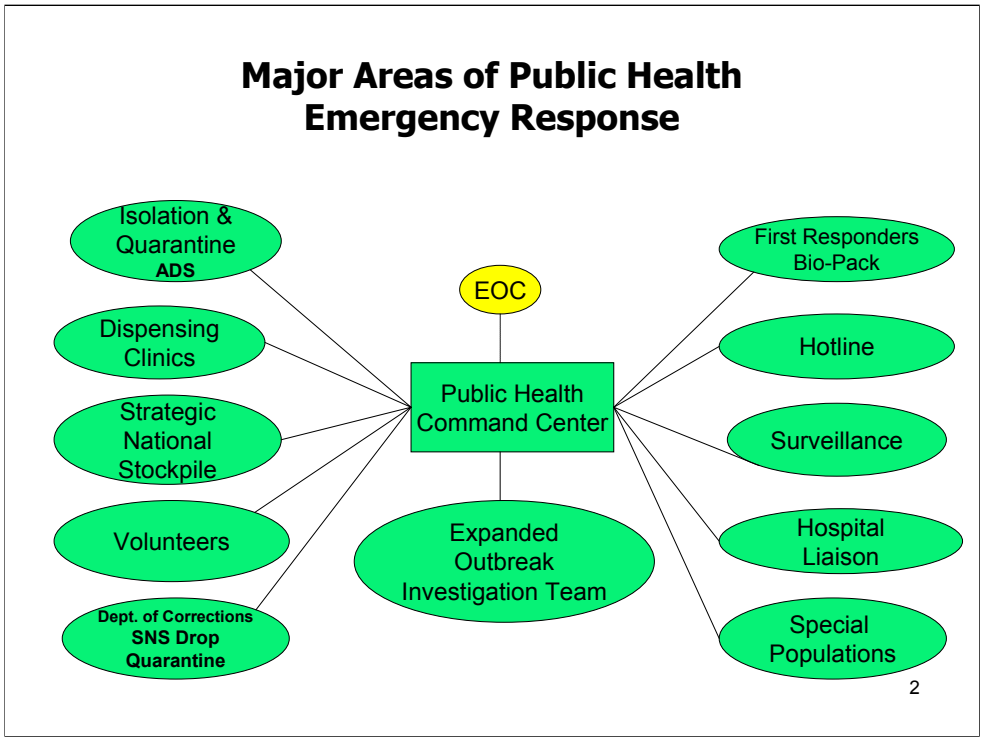
The role of public health in an emergency is seen as an extension of its mission to promote physical and mental health and prevent disease, injury, and disability. Depending upon the event, a local public health agency may serve in the lead position, in a collaborative role, or in a secondary/supportive role in an emergency within a given jurisdiction. Some of the roles that public health would provide or assist in the provision of during a declared disaster are:

- Detection education
- Management of event
- Surveillance of health-related data
- Investigation
- Medical management of individuals and groups
- Integration with other involved agencies
- Quarantine and Isolation
- Mass immunization/antibiotic distribution
- Continuous planning
- Evacuation, shelter, and mass feeding
- Mental health services
- Disaster eligibility and referral to services

It is important that county government staff become familiar with the responsibilities and functions of the major areas of public health emergency preparedness and response in order for local public health agencies to fulfill their role.

The following presentation serves as an introduction to the role of public health in emergency response.

This was a presentation provided to the Montgomery County Department of Recreation by Montgomery County's Department of Health and Human Services, Public Health Service, Emergency Preparedness and Response Program. The purpose of this presentation was to provide the audience with an overview of Montgomery County Public Health Emergency Preparedness and Response structure, what the roles and responsibilities are in a dispensing and vaccination clinic, and how the Department of Recreation staff might be used in a dispensing and vaccination clinic operation. The presentation was presented by the Montgomery County Director of Communicable Disease and Epidemiology. (This is to serve as an example presentation by a local public health agency).



This is our Emergency Preparedness and Response Program structure. All of the various components are under the leadership of the incident commander, who is housed at the public health command center. The Emergency Operations Center (EOC) are the locations from which the coordination of information and resources to support incident activities takes place. EOCs are typically established by the emergency management agency at the local and state levels.

Mission During A Declared Disaster

Provide or assist in the provision of:

- Evacuation, Shelter, and Mass Feeding
- Public Health Services to include mass immunizations or medication distribution
- Mental Health Services
- Disaster eligibility and referral to services

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Many of you may have experience providing several disaster services to county residents, particularly sheltering services.

Together, we will work with county mental health providers to provide mental health services.

Goal

- Familiarize Recreation staff with dispensing/vaccination clinic roles and responsibilities and clinic functions during a public health emergency.

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A public health emergency is defined as one that requires medication/vaccination.

Objectives

- Identify functions within the Dispensing/ Vaccination Clinic.
- Identify roles and responsibilities of clinic staff, including specific roles for Recreation staff.
- Build staff awareness and understanding of Incident Command System.

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Go over the objectives.

Everyone should have a family disaster plan.

This is the first step you'll need to address before you can report to a clinic.

(A more detailed presentation will be presented on the importance of having a family disaster plan will be covered in another presentation.

A family disaster plan can be downloaded from the American Red Cross website at http://www.redcross.org/pubs/dspubs/terrormat.html.

(It is important to repeat the importance of a family plan, it demonstrates that the county government is concerned about their employees and their families, and wants to ensure they are safe and well prepared for an emergency).

Clinic Staffing Needs

- Medicate/Vaccinate All Residents- X
- Medicate/Vaccinate: 2-10 days
- Internal Staffing
  - X clinic sites: X County government staff, including Recreation
  - Two 12 hour shifts = 24 hour operations
- Additional Staffing
  - Security, Transportation, and Staging
  - Hotline, Active Daily Surveillance, and Isolation/Quarantine Issues

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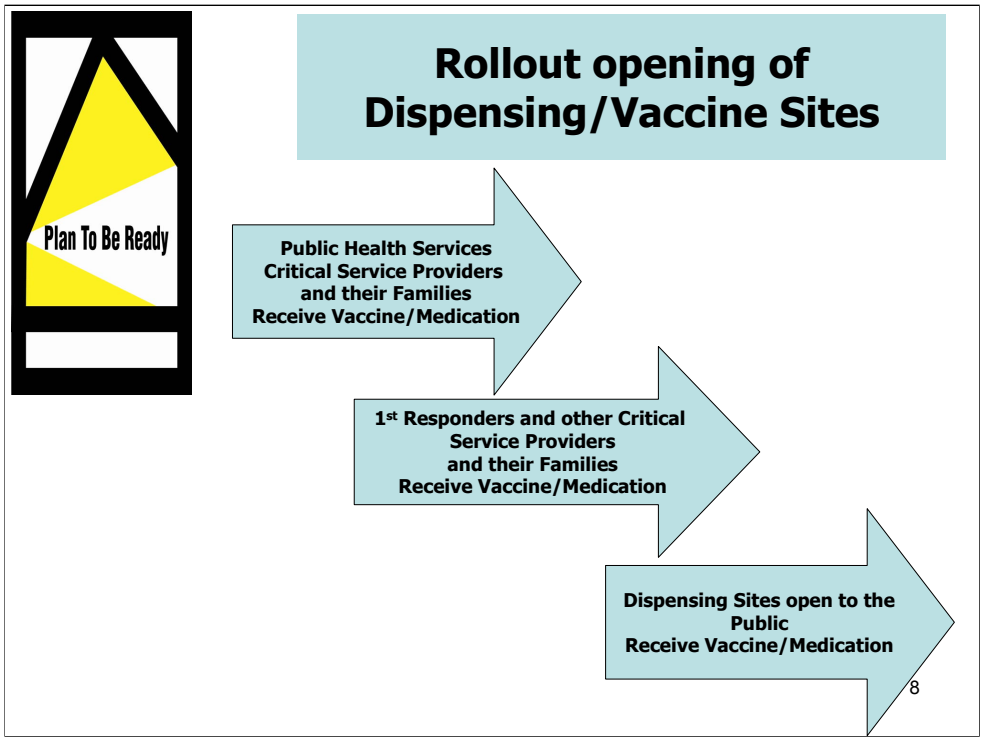
Site selection is event-driven and clinics may be located in schools, recreation centers, etc.

Notification of your assignment will come through your department. (You might want to specify and outline how information will come down).



When staff receives vaccination/medication depends on their individual role.

For example, in first arrow if staff are setting up the clinic, they will be among the first to receive medication.

Incident Command System

- An organized structure that exerts overall management of the incident.
- Provides communication flow of information and coordination through a "chain of command."

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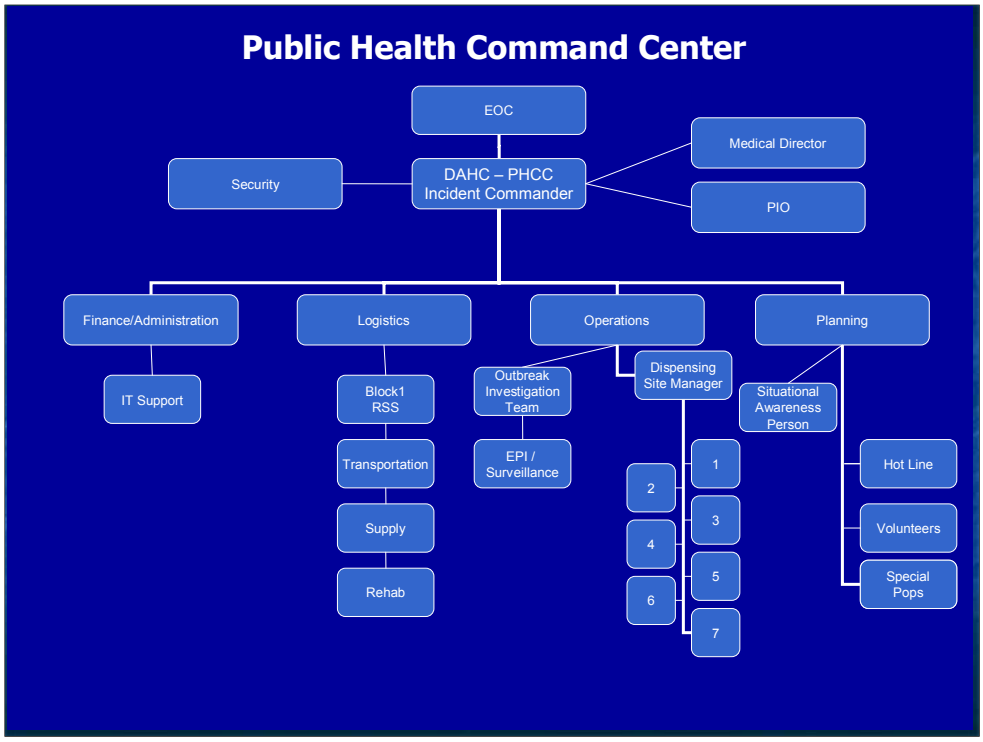
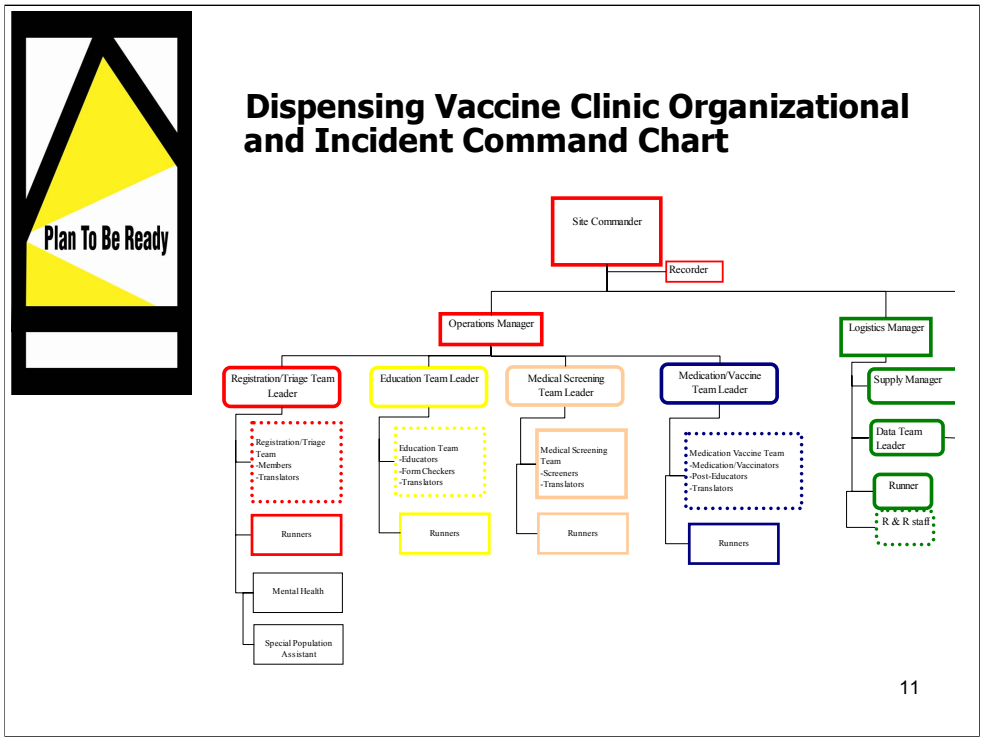
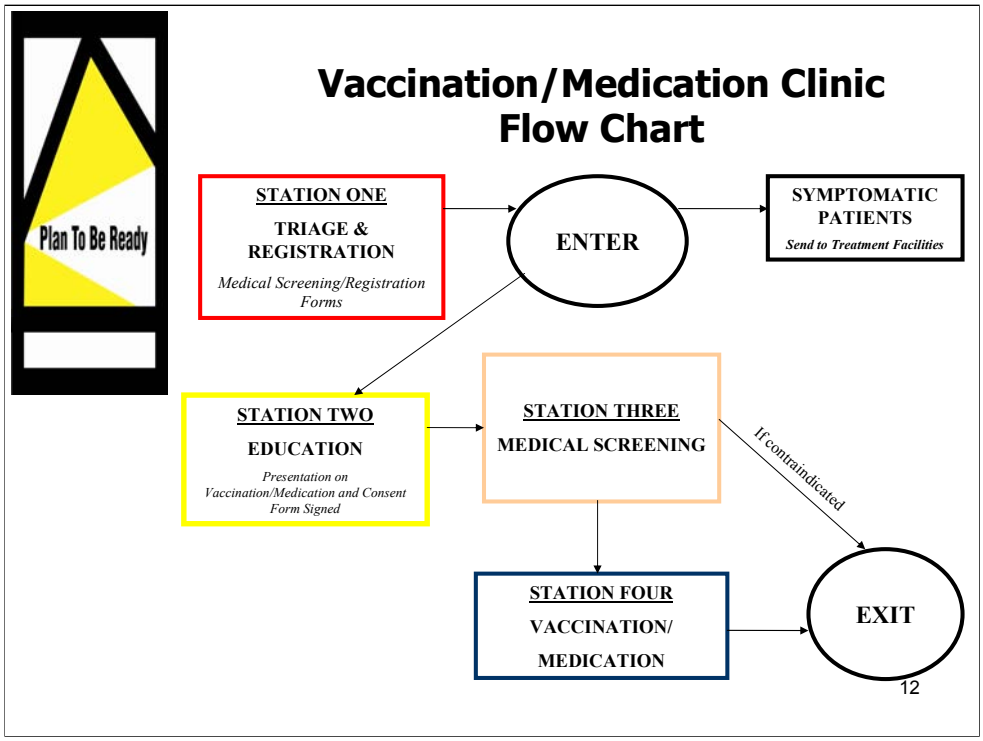


This is our Public Health Command Center organizational chart.

(Insert your organizational chart here).



This is our Dispensing Vaccine Clinic Organizational and Incident Command Chart. (If you have such a chart, insert it here).



Color Coding

Command Post (Green)

Station 1. Triage and Registration (Red)

Station 2. Education (Yellow)

Station 3. Medical Screening (Tan)

Station 4. Medication/Vaccination (Blue)

Staff Roles and Responsibilities

- **Triage/Registration Team Members**- Members triage patients and distribute registration forms and direct to next station.
- **Education Team Members-** Members conduct educational activities and help patients complete medical history forms and direct to next station.
- **Medical History Team Members-** Members review patient history for completeness and provide direction to appropriate station.

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The next three slides explain most of the roles for public health professionals related to clinic operations.

Your supervisor may inform you about the role you will play in the event of a public health emergency.

However, you may be called upon to work in another role that matches your background.

Staff Roles and Responsibilities (cont.)

- **Vaccine Medication Team Members-** Members assist and support medical dispensing and vaccination and conduct post education activities.
- **Logistics Team Members-** Provides support for clinic operations, i.e. supplies, record management/data entry and R&R for staff.
- **Data Entry Assistants-** Enter data into application and/or collect records.
- **Special Needs Assistants -** Members assist patients at assigned stations who need assistance navigating through the process.

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Staff Roles and Responsibilities (cont.)

- **Runners**- Transmit information and supplies between stations.
- **Translators-** Provides assistance for patients needing translation in the clinic.
- **Mental Health Providers-** Offers assistance to patients in need of mental health support to navigate the clinic.
- **Transportation Assistants**- Provides help with patient flow at clinic site and staging areas.

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Emergency Preparedness Websites

- www.bt.cdc.gov
- www.jhsph.edu/CPHP
- www.upmc-biosecurity.org
- http://www.apic.org/Content/NavigationMenu/PracticeGuidance/Topics/Bioterrorism/Bioterrorism.htm

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Here are some helpful emergency preparedness websites. (You may want to add in links from your state and local health departments).

4. Biological Agents

Introduction to Weapons of Mass Destruction

Bioterrorism Preparedness

For how long is the smallpox vaccine protective?

Smallpox vaccination provides high level immunity for 3 to 5 years and decreasing immunity thereafter. If a person is vaccinated again later, immunity lasts even longer. Historically, the vaccine has been effective in preventing smallpox infection in 95% of those vaccinated. In addition, the vaccine was proven to prevent or substantially lessen infection when given within a few days of exposure. It is important to note, however, that at the time when the smallpox vaccine was used to eradicate the disease, testing was not as advanced or precise as it is today, so there may still be things to learn about the vaccine and its effectiveness and length of protection.

Source: http://www.bt.cdc.gov/agent/smallpox/vaccination/facts.asp

Introduction to Weapons of Mass Destruction

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Johns Hopkins
Center for Public Health Preparedness

Weapons of Mass Destruction Chemical—Biological—Radiological—Nuclear

- Are usually grouped together because they can be used to kill large numbers of people.
- Are fundamentally different:
  - **Chemical Weapons** – poisons used to kill or incapacitate
  - **Biological Weapons** – infectious diseases or toxins used to kill or incapacitate
  - **Radiological/Nuclear Weapons** – radiation/explosive blast

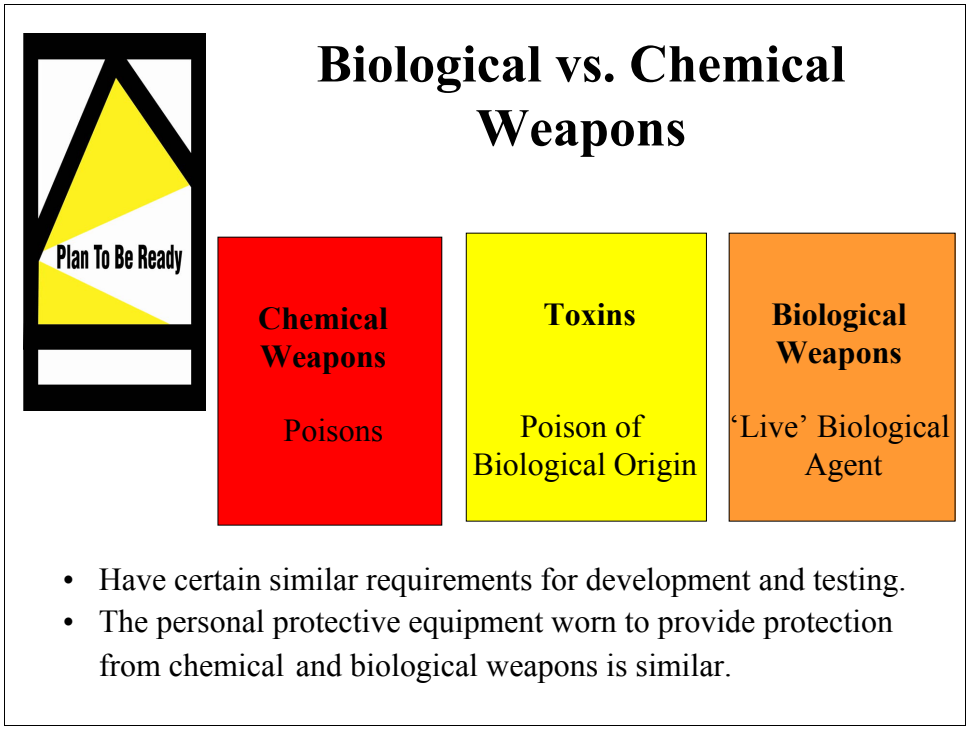
Introduction to Bioterrorism Preparedness

We are now going to transition to a category of terrorism preparedness most familiar to public health: bioterrorism. This is the area that has received the most attention in public health and, as we will see, is distinct in some critical ways from chemical terrorism preparedness.

What is a Biological Weapon?

1. Biological agent or toxin
   - Bacteria
   - Mycoplasma
   - Rickettsiae
   - Viruses
   - Yeasts
   - Fungi
2. Additives
3. Delivery system

As we begin our discussion of bioterrorism, it's important to review the components of a biological weapon. Any biological weapon includes: (1) the agent itself (this can be bacteria, viruses, etc.); (2) an additive; and (3) a delivery system. Question: In the anthrax attacks of 2001, what was the delivery system? Answer: It was the mail system.



When we talk about a chemical weapon, we are talking about "poisons". When we talk about a biological weapon, we are talking about a "live" biological agent. Toxins are "poisons of biological origin": examples of toxins include botulinum toxin and ricin toxin.

	Chemical	Biological
Mode of Action	Poison	Infectious disease or toxin
Onset of symptoms after exposure	Seconds to hours	Infectious Disease – days to weeks Toxins – hours to days
Properties	Solid, liquid or gas	Liquid or solid (dried)
Delivery	Vapor, gas, aerosol, liquid, or solid	Aerosol or direct contact
Persistency	Yes – depending on conditions and agent	Not usually
Routes of exposure	Inhalation, skin, or oral	Inhalation, open wound infection, contamination of food/water, or vector
Symptoms at time of exposure	None to shortness of breath, small pupils, runny nose, burning sensation, loss of consciousness, convulsions, death	None

This slide highlights some key distinctions between chemical and biological weapons. Some of the most critically significant differences are highlighted in yellow on the chart. Whereas with chemical weapons, the onset of symptoms occurs rapidly (seconds to hours) after exposure, symptoms develop much more slowly (days to weeks) following exposure to biological weapons. While chemicals can be delivered in a wide variety of forms (vapor, gas, aerosol, liquid, or solid), delivery of biological weapons occurs via aerosol or direct contact. At the time of exposure to biological agents, there are NO symptoms. This creates unique challenges for public health, since the recognition of symptoms is dependent on the incubation period – so with biological agent recognition and response, we are always by definition playing a game of “catch up”. In contrast, we know either immediately or within a matter of hours when a chemical attack has occurred.

Biological Weapons are Unique

- The consequence of a biological weapon attack could be an epidemic.
- The **response** required is fundamentally different from that demanded by natural disasters, conventional explosives, chemical terrorism, radiological terrorism or nuclear weapons.

Biological weapons attacks have unique consequences. Since the result of a biological attack could be an epidemic, the required RESPONSE poses unique challenges for public health.

Delivery Systems

- Any device that can produce an effective aerosol can be fashioned into a BW delivery system:
  - Bombs/bomblets
  - Aircraft with spray tank
  - Truck-mounted sprayer
  - Crop duster
  - ABC fire extinguisher
  - Can of underarm deodorant

A wide array of delivery systems – some of them quite crude – could be used to deliver a biological weapon. Even something as simple as a can of underarm deodorant could be used to disseminate a bioweapon. This wide array of dissemination modalities poses significant challenges for homeland security. Past advisories prohibiting crop duster aircraft from flying over urban areas have been based on concern of a bioweapon being disseminated in this fashion.

What is an Aerosol?

- An aerosol is a suspension of liquid droplets or small particles in the air.
- To be effective, an aerosolized biological agent
  (i.e. bioaerosol) must be of the right size so that the particles will remain suspended in the air and that the particles will be inhaled into the lower lungs where infection takes place.

We mentioned earlier that bioweapons can be disseminated via aerosol or via direct contact. An aerosol is simply a suspension of liquid droplets or small particles in the air; to cause disease, these aerosolized particles must be extremely small to reach the lower lung fields where infection takes root.

Types of Biological Attack

- **Overt** – direct, observable attack with biological weapons.
- **Covert** – concealed/secret attack with biological weapons.

Because the symptoms of biological weapons take days to weeks to manifest following exposure, biological weapons attacks tend to be covert (secret) in nature, in dramatic contrast to chemical weapons attacks (for example, the sarin attack in Tokyo subway) which would be more “overt” (directly, readily observable).

Why all the Concern?

- Highly destructive
- Materials and knowledge to create BW are accessible, widely distributed, dual-use, relatively cheap
- BW production is difficult to detect
- No return address, nothing to hold at risk
- CIA estimates that several states possess or are seeking offensive BW capacity - including states named by State Dept. as state sponsors of terrorism
- New discoveries of bioscience in 21st Century
- Globalization and vulnerability to infectious disease

This slide illustrates the reason for concerns about bioterrorism. Ironically, many of the advances in genetic engineering could potentially be used to reengineer bioweapons too, producing symptoms and disease patterns not previously seen. However, for our discussion of bioterrorism agents, we will focus on data based on historical outbreaks and the known natural histories of these diseases.

But What's the Actual BW Threat?

Threat =
Vulnerability X Capability X Intent

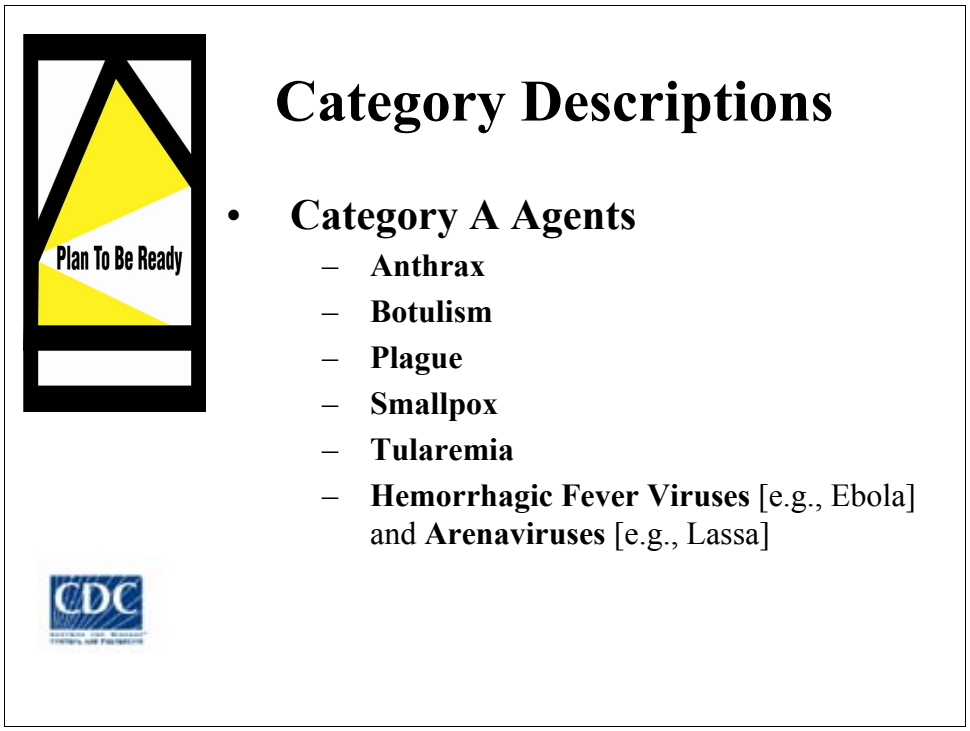
Uncertain

The actual bioterrorism threat can be considered as a product of the vulnerability of a community, the capability of a terrorist to inflict harm via biological weapons, and the intent of the terrorist. The ultimate product of these variables is uncertain, although we have had direct recent experience in the U.S. with bioterrorism during the anthrax attacks of 2001.

What are the Major Threat Agents?

- **Category A Agents**
  - Highest priority agents
  - Can be easily spread or transmitted
  - Result in high lethality and have the potential for major public health impact
  - Might cause public panic and social disruption
  - Require special action for public health preparedness

The Centers for Disease Control and Prevention (CDC) define three tiered categories of bioterrorism agents: Category A, B, and C. Category A agents are the highest priority bioterrorism agents because they can be easily spread or transmitted, result in high lethality, and have the potential for major public health impact.



This is the list of Category A bioterrorism agents as defined by CDC.

Category Descriptions

- **Category B Agents**
  - Second highest priority agents
  - Moderately easy to spread
  - Result in moderate illness rates and low lethality
  - Require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.

CDC

Category B agents can be considered the second highest priority agents from a bioterrorism standpoint. In contrast to category A agents, category B agents are MODERATELY easy to spread and result in LOW lethality.

Category Descriptions

- **Category B Agents**
  1. **Brucellosis**
  2. **Epsilon toxin of Clostridium perfringens**
  3. **Food safety threats** (e.g., Salmonella, E.coli)
  4. **Glanders**
  5. **Melioidosis**
  6. **Psittacosis**
  7. **Q fever**
  8. **Ricin toxin**
  9. **Staphylococcal enterotoxin B**
  10. **Typhus fever**
  11. **Viral encephalitis** (alphaviruses)
  12. **Water safety threats** (e.g., cholera)

CDC

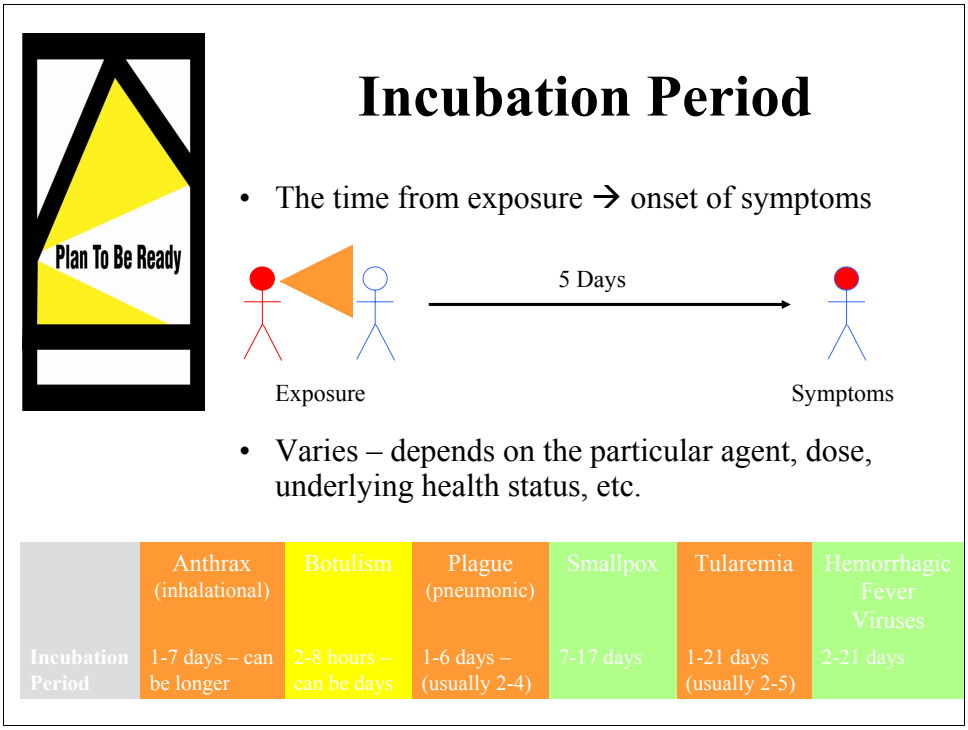
There is a long list of Category B agents. You may be surprised to see agents on this list that are familiar to you in your work in public health. For example # 3 (food safety threats); # 9 (staff enterotoxin B); and # 12 (water safety threats) are all potential bioterrorism agents. Question: has there ever been a bioterrorism attack in the U.S. with a foodborne agent? Answer: YES – in the 1980s, a religious group in Oregon intentionally contaminated a salad bar with Salmonella with the intent to alter the results of a local election. Over 700 people were sickened, with no fatalities.

Category Descriptions

- **Category C Agents**
  - Third highest priority agents
  - Include emerging pathogens that could be engineered for mass dissemination in the future
  - Potential for high illness and lethality rates and major health impact
  - Include emerging infectious disease threats such as Nipah virus and Hantavirus

CDC

The CDC considers Category C agents the 3rd highest priority category of bioweapons agents. These agents include new and emerging infectious diseases. You may remember an outbreak of a mysterious respiratory illness in the U.S. desert Southwest, that was ultimately linked to rodent feces. This was Hantavirus, an example of a category C agent.



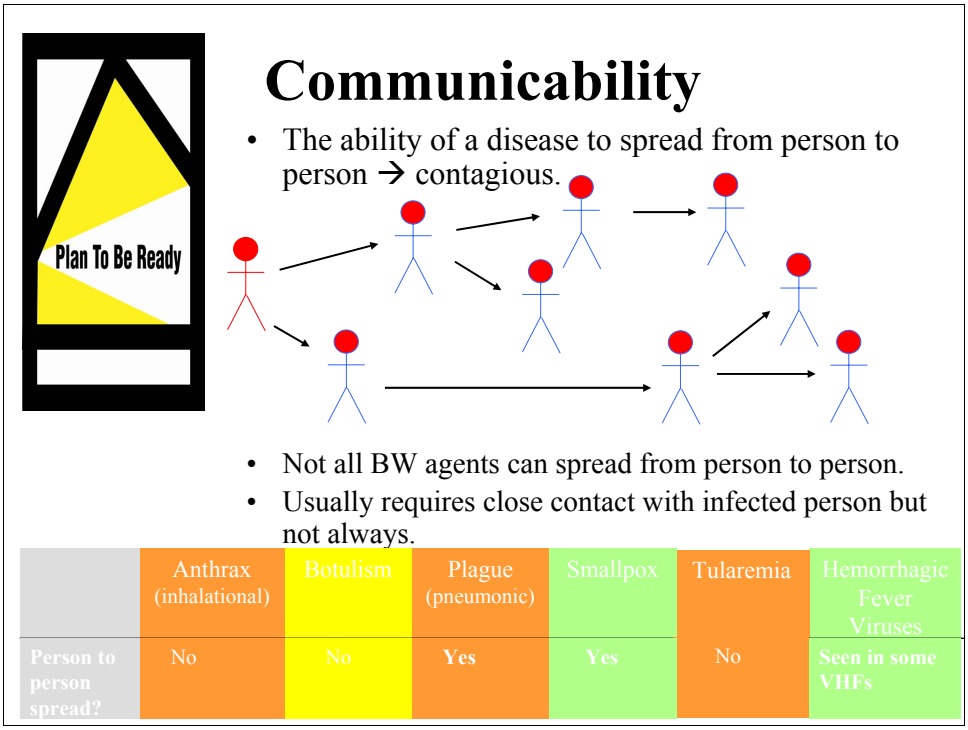
On the next several slides, we will take a look at big picture concepts to help us better understand bioweapons agents. At the bottom of these slides, there is a side-by-side comparison of the Category A bioagents in terms of these "big picture" concepts. The first big picture concept we will look at is "incubation period": this is the time between exposure to a biological agent and the onset of symptoms. As we can see, there is a range of incubation periods among the different Category A agents, ranging from 2-8 hours (botulism) to up to 3 weeks (hemmorhagic fever viruses). The incubation period for most of the Category A bioagents is days to weeks.

Diagnosis

- Diagnosis of infection with BW agents is generally made by clinical presentation of symptoms.
- Confirmed by laboratory tests that can take days or weeks to complete.
- Rapid, diagnostic, clinical tests are not currently available for most BW agents.

	Anthrax (inhalational)	Botulism	Plague (pneumonic)	Smallpox	Tularemia	Hemorrhagic Fever Viruses
Initial Diagnosis	Clinical Presentation	Clinical Presentation	Clinical Presentation	Clinical Presentation	Clinical Presentation	Clinical Presentation

Rapid diagnosis is one of the biggest public health challenges in the context of bioterrorism, since ALL of the Category A agents have the same vague, flu-like clinical presentation at first. One can imagine the challenges this presents to healthcare workers: for example, “Is this garden variety influenza or the earliest symptoms of inhalational anthrax?” A high degree of clinical suspicion is therefore required: not all hoofbeats are necessarily from horses, some can be from zebras!



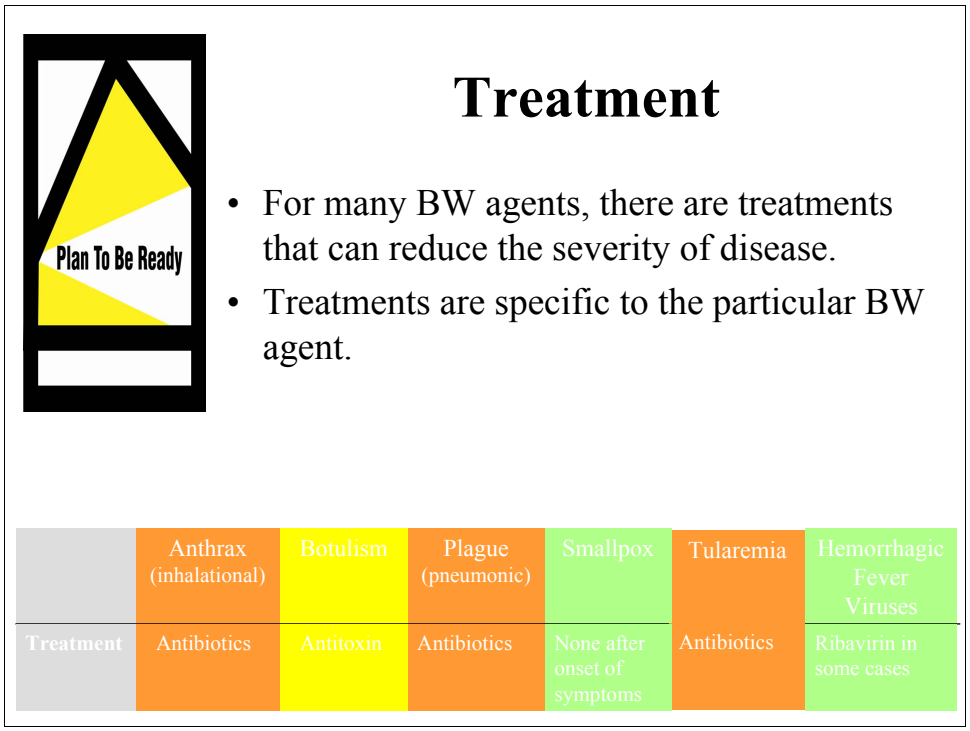
Communicability, put simply, is the ability of a disease to be spread from person to person. Not all Category A agents are person to person communicable: for example, anthrax is not communicable; however, smallpox and plague are.

Post-Exposure Prophylaxis

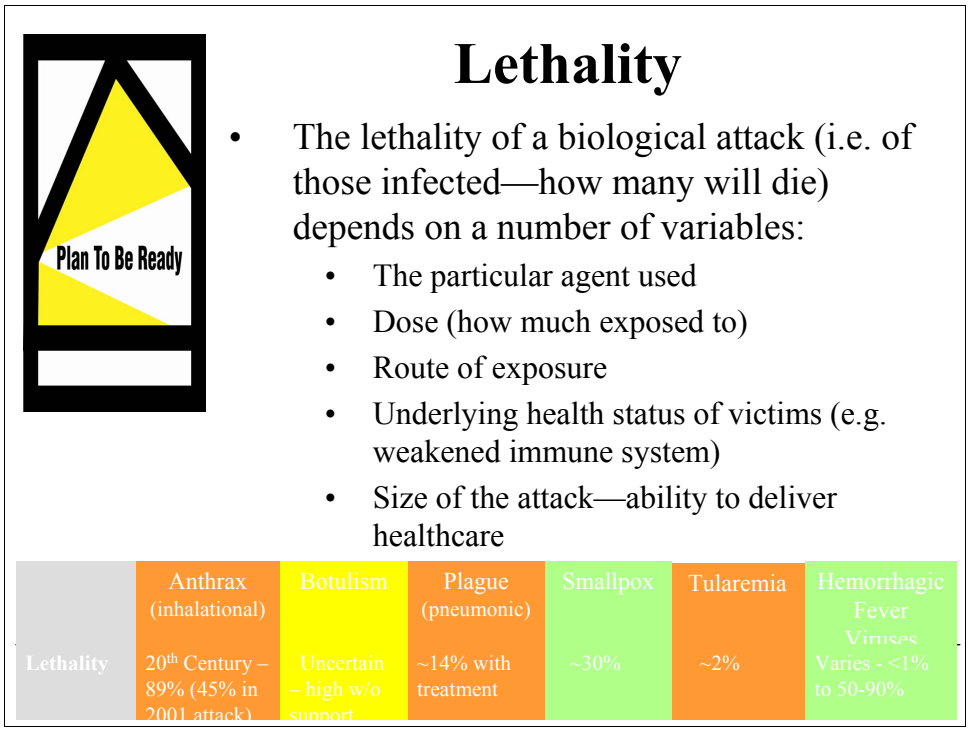
- After a biological attack – can treatment prevent development of disease?
- For some BW agents – post exposure prophylaxis is available.
- Depends on the particular agent, dose, route of exposure, etc.

	Anthrax (inhalational)	Botulism	Plague (pneumonic)	Smallpox	Tularemia	Hemorrhagic Fever Viruses
PEP	Yes	Yes Limited	Yes	Yes	Yes	No – ribavirin in some cases

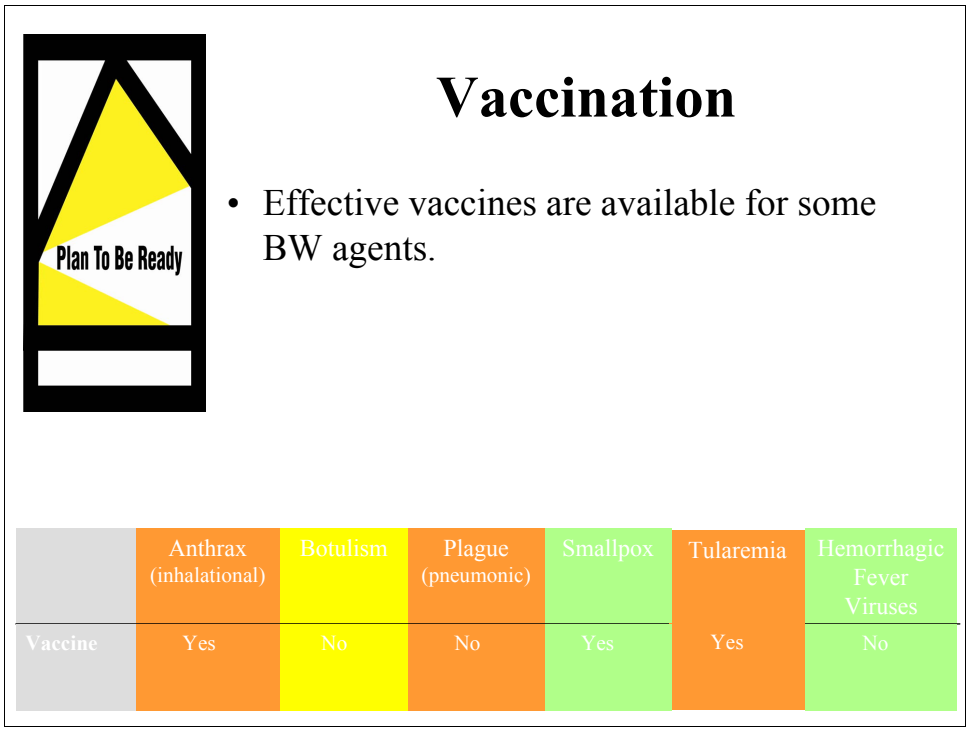
Post-exposure prophylaxis refers to medicines or vaccines that can prevent the development of a disease in people who are not yet sick but who have been exposed to an agent. The good news is that post-exposure prophylaxis is available for most bioterrorism agents. Question: What is the post-exposure prophylaxis for anthrax? Answer: Cipro or Doxycycline. Question: What is the post-exposure prophylaxis for smallpox? Answer: The smallpox vaccine (*NOTE: to be effective in preventing smallpox, the smallpox vaccine must be given within 3 - 4 days following exposure!*)



In contrast to post-exposure prophylaxis, treatment refers to the provision of medications to individuals who are already sick with the disease in order to get them well. Treatment is available for many of the Category A bioterrorism agents. A notable exception is smallpox, for which there is NO treatment following the onset of symptoms.



Lethality refers to the “killing capacity” of a biological agent. This depends on a variety of factors, including: type of agent, dose. route of exposure, underlying health status, and availability of health care resources based on size of the attack. The respective lethality of the Category A agents are shown at the bottom of the slide.



Effective vaccines are available for some Category A agents. Examples include anthrax (currently available for military personnel only) and smallpox.

So What Can The Public Do?

- **Basic disaster preparedness**:
  - Have an emergency plan for your family – how to contact each other (e.g. phone tree) – where to meet (e.g. pre-determined place to meet) – have an evacuation plan.
  - Assemble a disaster supply kit – non-perishable food, bottled water, 'special needs items' (e.g. infant formula), clothing/bedding, first aid kit (prescription medications), sanitation supplies, radio, batteries, etc.

More info at http://www.ready.gov/make_a_kit.html

Preparing for a bioterrorism event involves the same basic preparedness concepts as for any large-scale public health emergency. More information about disaster preparedness is available at the U.S. Department of Homeland Security website, http://www.ready.gov

More Information

By US mail/phone:

1. U.S. Department of Homeland Security, Washington, D.C. 20528
   1-800-BE-READY
2. Red Cross Central Maryland Chapter
   4700 Mount Hope Dr
   Baltimore, MD 21215-3231
   Phone: 410-764-7000

On the Web:

1. **http://www.hopkins-biodefense.org**
2. **http://www.bt.cdc.gov/Agent/agentlist.asp**
3. **http://www.redcross.org/services/disaster/beprepared/hsas.html**
4. **http://www.ready.gov/**

Here are resources for additional information on bioterrorism readiness and response.

Thank You

Questions?

5. Chemical Agents

Chemical Terrorism Preparedness
Fact Sheet

Chemicals used as weapons of mass destruction are those chemicals intended for use in military or terrorist operations to immobilize, incapacitate or kill military or civilian personnel. Chemical agents are classified as either lethal, or incapacitating and "riot control" according to their intended use.

There are five classes of chemical agents, all of which produce incapacitation, serious injury or death.

- Nerve agents
- Blister agents
- Blood agents
- Choking agents
- Irritating agents (can included riot control agents)

These have been sub-divided into two categories (not including riot control agents): industrial materials used or considered as chemical warfare agents, and chemical warfare agents, which have little or no other purpose beyond their intended use as weapons of mass destruction on the battlefield.

Agent	**Choking**	**Blood**	**Nerve**	**Blister**	**Decontamination for Chemical agents**	**Response Actions**
Example of Industrial agent	Chlorine	Hydrogen Cyanide	Malathion		**Blot** agent off of exposed skin **Strip** clothing **Flush** affected area **Cover** the victim	Do not enter the cloud Heed warnings to shelter in place or evacuate All chemical agents are heavier than air except hydrogen cyanide
Example of Warfare agent			Sarin, VX	Sulfur mustard, Nitrogen mustard		
Mode of action	Absorption through lungs causing fluid build-up	Absorption through the lungs, disrupting the body's ability to utilize oxygen.	Absorption through skin and lungs	Absorption through lungs and skin, causing blisters to form on skin and mucus membranes		
Symptom	Cough, choking	Dizziness, nausea, and weakness	Seizures, paralysis of muscles, including heart and diaphragm	Wounds very similar to burn patients		

Introduction to Weapons of Mass Destruction

Diane E. Zerbe, MHS
Cindy Parker MD, MPH
Daniel J. Barnett MD, MPH

Johns Hopkins
Center for Public Health Preparedness

Weapons of Mass Destruction Chemical—Biological—Radiological — Nuclear

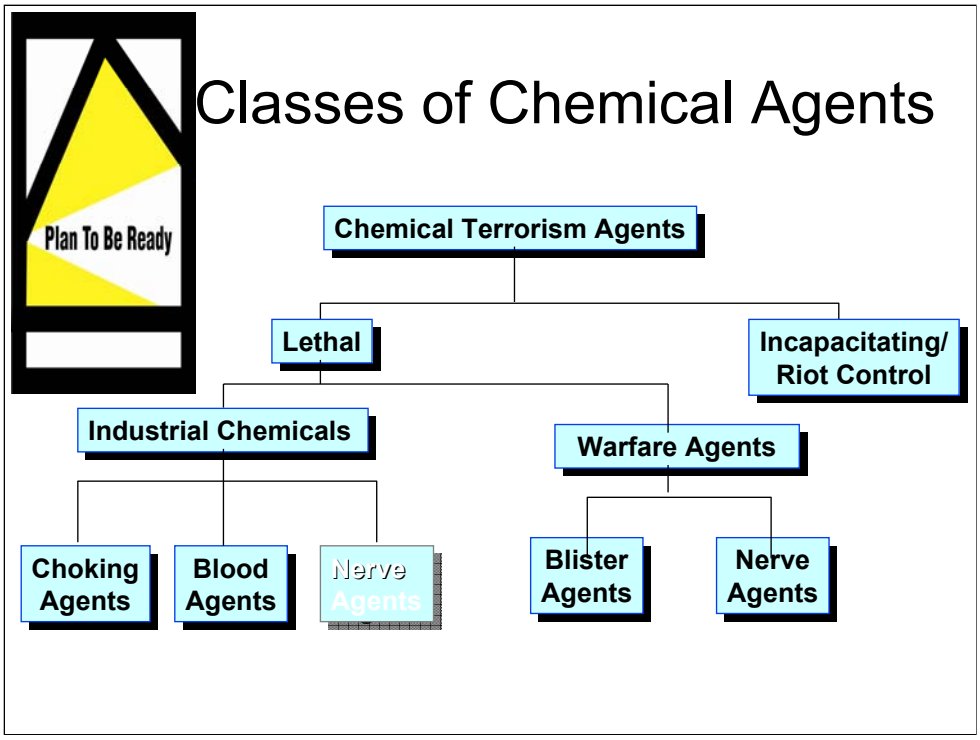
Are usually grouped together because they can be used to kill large numbers of people.

Are fundamentally different:

- **Chemical Weapons** – poisons used to kill or incapacitate
- **Biological Weapons** – infectious diseases or toxins used to kill or incapacitate
- **Radiological/Nuclear Weapons** – radiation/explosive blast

Introduction to Chemical Terrorism Preparedness

Diane E. Zerbe
Cindy Parker, MD, MPH
Johns Hopkins University
Center for Public Health Preparedness



CLASSES OF CHEMICAL AGENTS

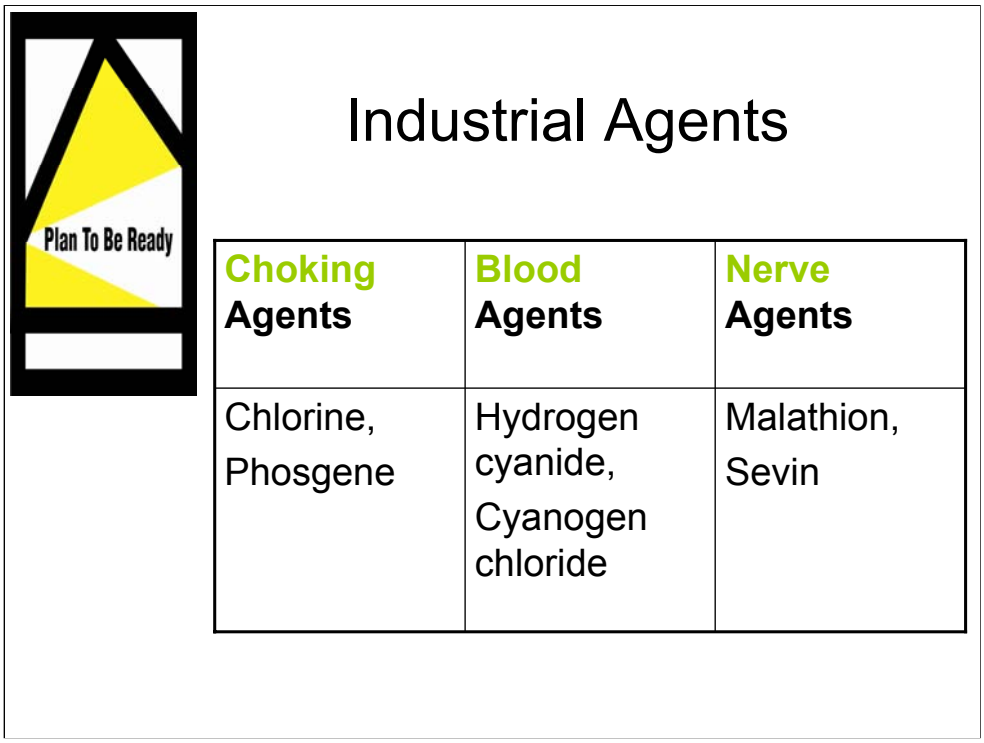
Chemical agents are classified as either lethal, or incapacitating and "riot control," according to their intended use. For the purposes of this presentation, the emphasis has been placed on lethal agents.

a. These have been sub-divided into two categories: industrial materials used or considered as chemical warfare agents, and chemical warfare agents, which have little or no other purpose beyond their intended use as weapons of mass destruction on the battlefield.

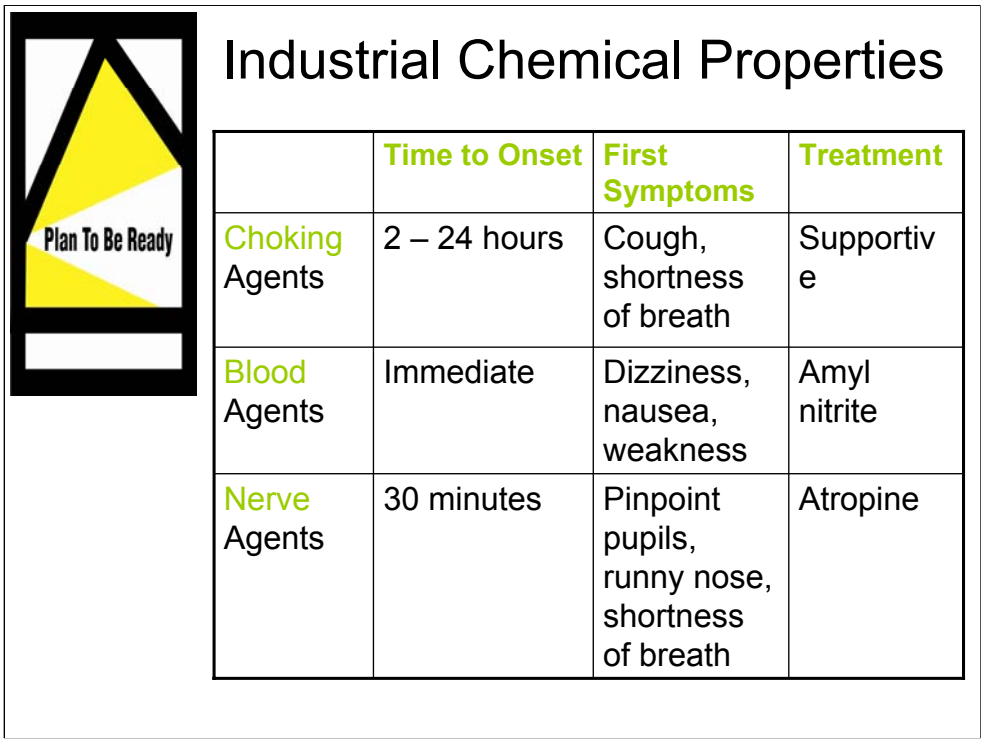
   We will briefly review the first category, as it provides both the historical context in which chemical agents were first introduced and bridges the gap between normal hazardous materials and the concept of the supertoxic chemical warfare agents.

b. Incapacitating and riot control agents are not considered as primary terrorist threats, but can be used for purposes of disruption. The effects of these agents are relatively short duration and minimal toxicity. They will not discussed in detail in this module.

c. Since incapacitating agents can be used (and often are used, either deliberately or accidentally), and since their initial effects may be similar to the initial symptoms of more lethal chemical agents, this module will discuss how to distinguish the use of an incapacitating agent from the use of a more lethal chemical agent where applicable.



We will be focusing on three major types of Industrial Agents: choking agents, blood agents, and nerve agents. These agents are common in many industrial processes. Chorine for example is a major component of many industrial processes can be found in common household cleaners. Chorine is commonly transported by rail tanker cars and by truck tankers through populated areas. Hydrogen cyanide is also used in industrial processes. Do you recognize the two chemicals listed under “Nerve agents?” These agents (malathion and Sevin) are commonly used herbicides.

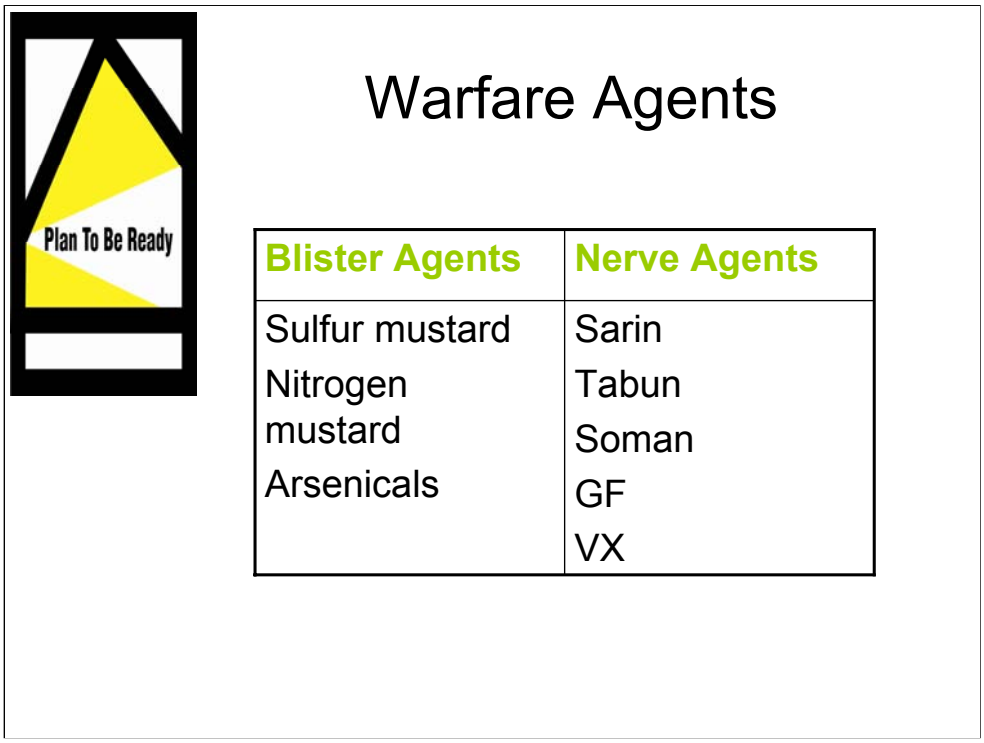


Industrial agents are of importance because exposure to these industrial agents can be accidental of purposeful. A recent train derailment in South Carolina resulted in at least 9 deaths and hundreds of injuries.

The three categories described here are choking, blood and nerve agents. Choking agents are absorbed through the lungs they cause irritation, resulting in build up pf fluid and choking. Blood agents are absorbed through the lungs and disrupt the body's ability to utilize oxygen. Nerve agents are absorbed by contact with the skin or lungs and cause seizures, paralyzing muscles such as the heart and diaphragm.

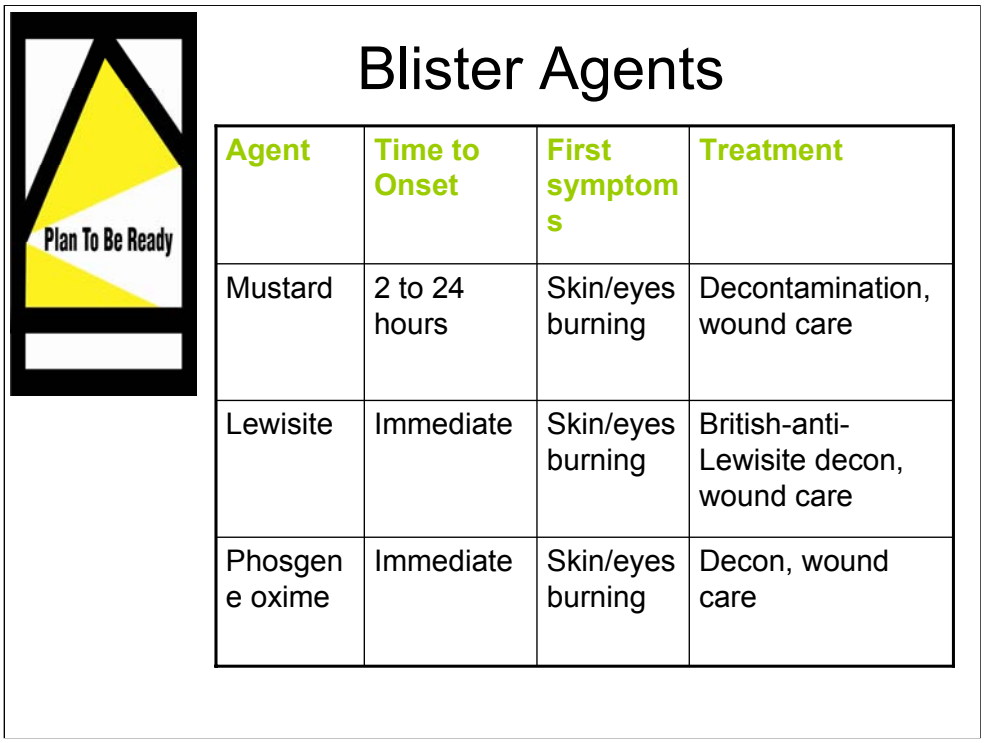
This slide relates time of onset, first symptoms and treatment for exposure for these agents.

Treatments may be difficult to administer and have significant side effects.



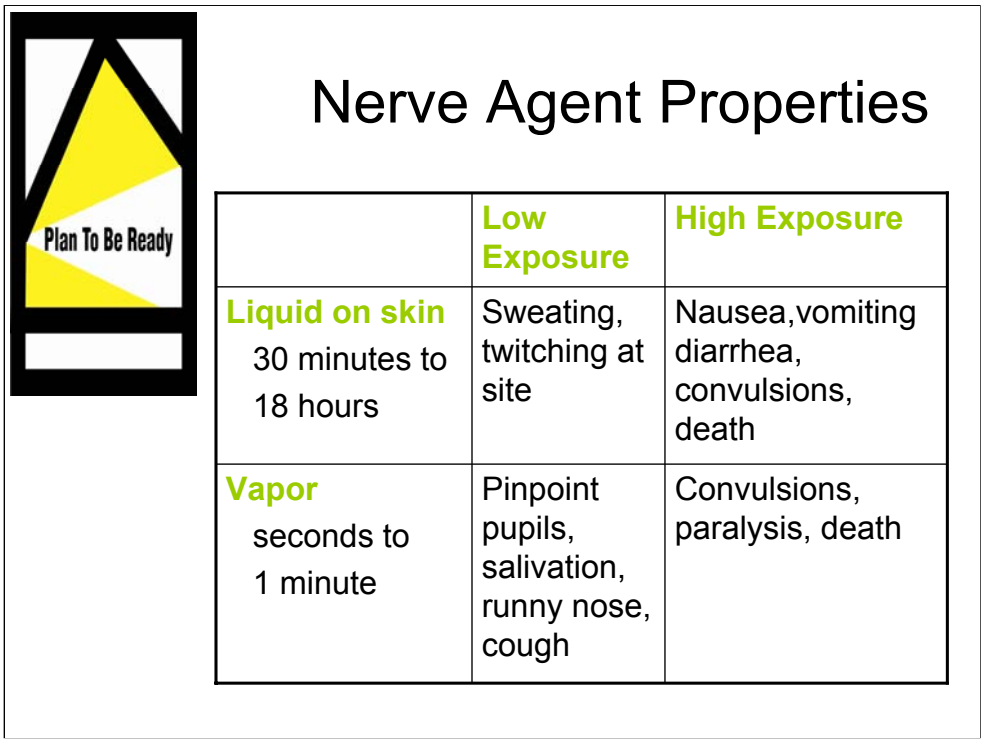
Warfare agents are those agents produced for the sole purpose of use in attacks on military forces and civilians. We will be talking about two categories, blister agents and nerve agents. We talked about the mode of absorption of nerve agents in an early slide. Blister agents are absorbed through the lungs and skin causing blisters to form on skin and mucus membranes. Wounds are very similar to burn patients.

Common blister agents are the mustards used extensively in WWI.

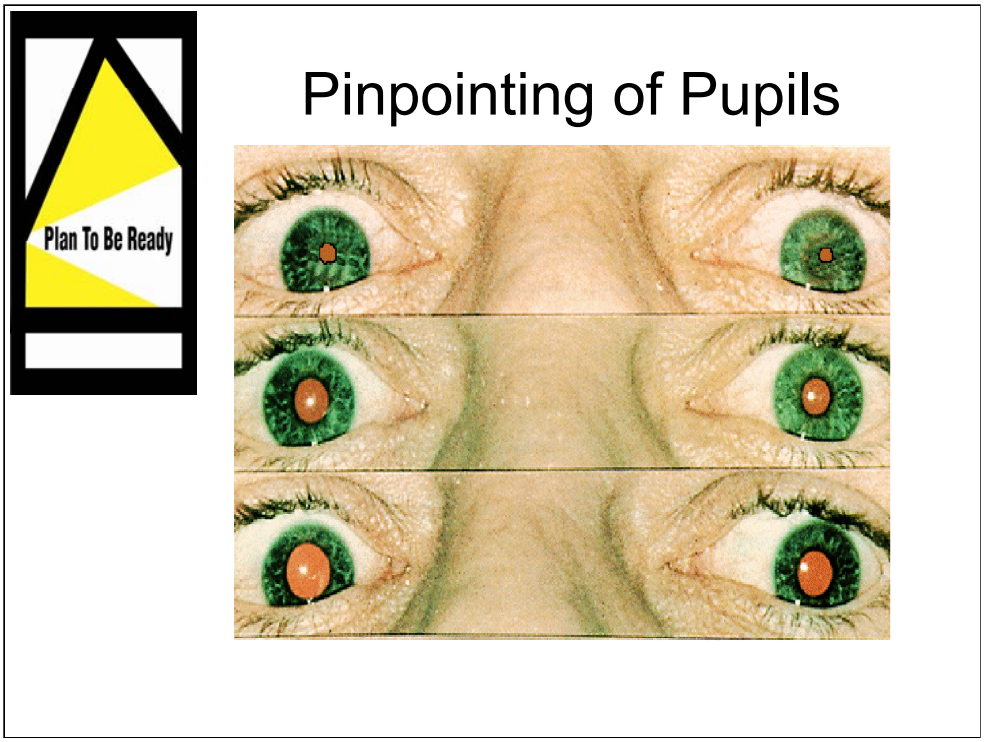


Mustards readily penetrate ordinary clothing, leather and skin. After a latent period of several hours the effects become apparent on the skin, eyes, respiratory and gastro-intestinal tracts. Eye inflammation may develop in one - two hours and skin blisters form about 12 hours after exposure. All lesions are susceptible to infection and damaged tissue are slow to heal (risk of permanent eye damage, bronchopneumonia, chronic bronchitis). Treatment is only symptomatic and supportive. Skin decontamination should be carried out immediately with copious amounts of soap and water, and the eyes should be thoroughly irrigated with water. Lewisite is a vesicant liquid with similar affects to the mustards but has a more immediate action as it rapidly penetrates rubber, plastic and skin, causing immediate and severe pain with rapid incapacitation, and deeper necrosis. It hydrolyses rapidly and is thus less persistent in moist climates. Decontamination should be carried out immediately (as above). Symptomatic and supportive treatment is required.

Phosgene oxime is a manufactured chemical warfare agent, called an irritant or nettle agent. This is because on contact with the skin, it produces intense itching and a rash similar to hives. Phosgene oxime is also referred to as a corrosive agent because of the type of skin and tissue damage it causes.



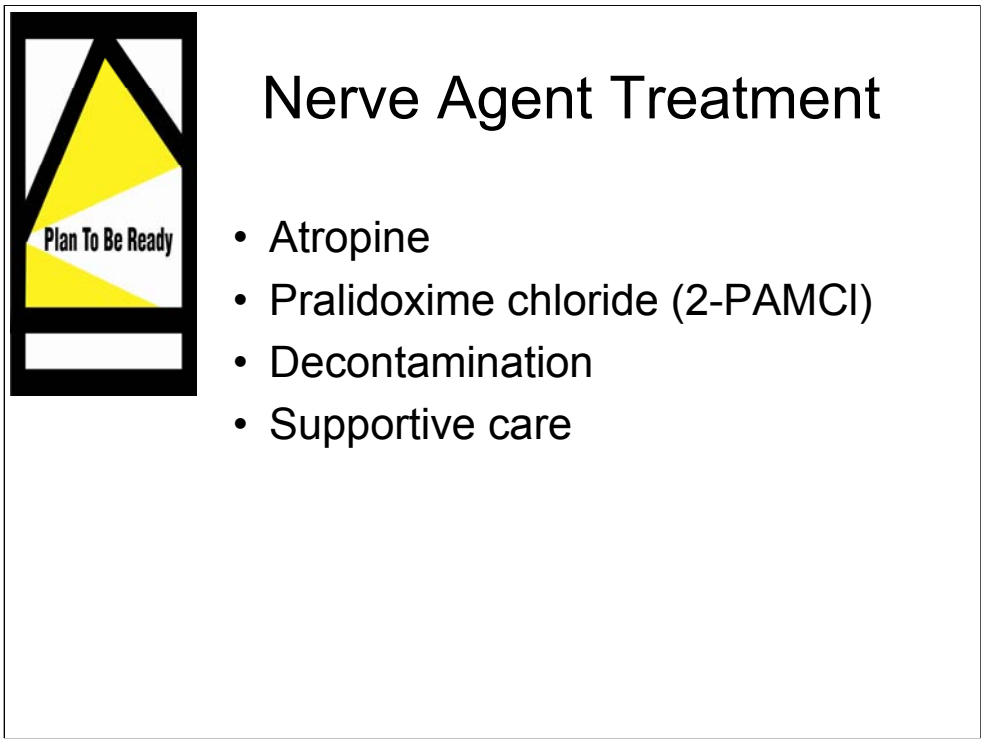
Sarin, VX, Tabun, and Soman, are highly toxic chemicals, effective at very low concentrations and virtually odorless. Most were originally used as pesticides. They produce salivation and paralysis of the respiratory muscles. In liquid or vapor state, these organophosphate nerve agents rapidly penetrate all normal clothing and mucous surfaces including the cornea, and the vapor is quickly absorbed by upper and lower respiratory tracts. Exposure to high concentrations causes irregular shallow breathing, convulsions, and death within a few minutes. Smaller doses cause nausea and vomiting, constriction of the pupils, tightness of the chest, and a runny nose. Effective life support is vital.



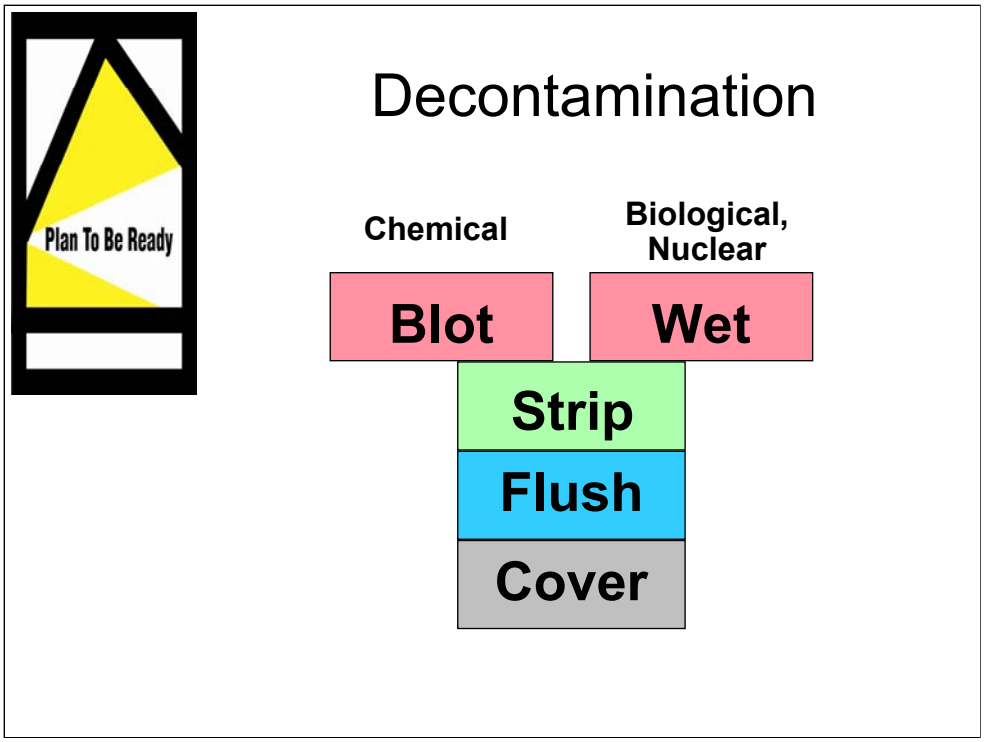
PINPOINTING OF PUPILS

Here are examples of eye pupils under the following circumstances: pupils in reduced light (bottom), pupils under regular lighting conditions (middle), and pinpointed pupils as a result of nerve agent exposure (top).

NOTE: Pinpointed pupils can also result from Heroin overdoses, without tearing or drooling. Exposure to pepper spray will result in copious flow of tears or drool without pinpointing of pupils.



This is the regimen used to treat exposure to nerve agents.



EMERGENCY SELF-DECONTAMINATION

To perform emergency self-decontamination:

a. Wet or Blot.

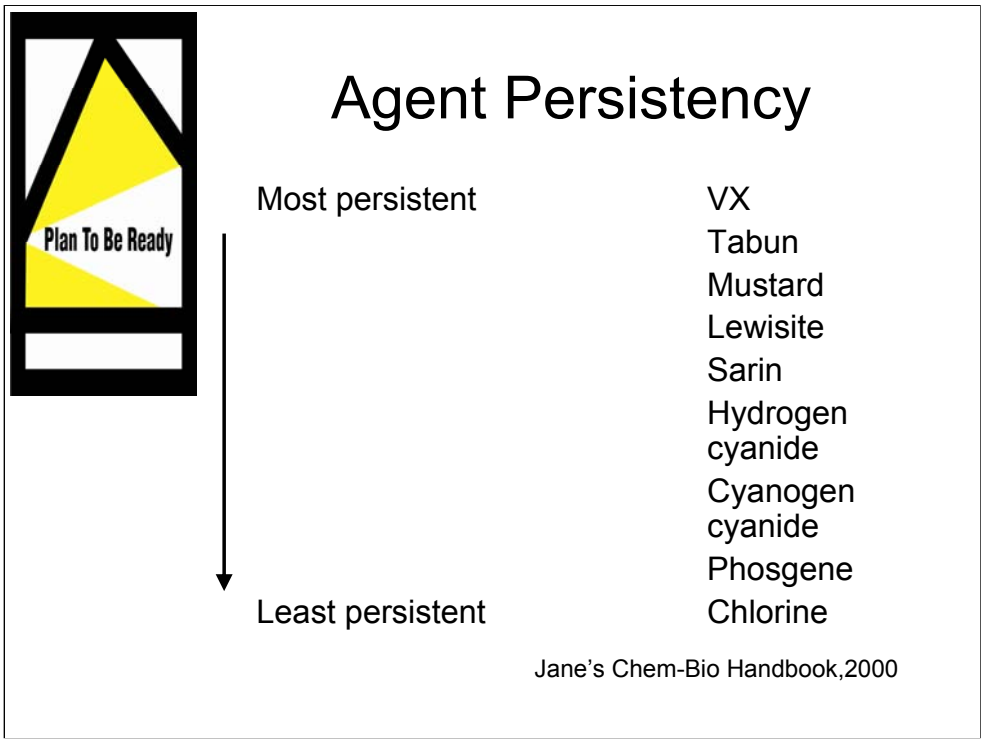
(1) For nuclear and biological contamination, wetting down exposed surfaces will help prevent the contamination from re-suspending in the air.

(2) For chemical liquid contamination, carefully blot the agent off of exposed skin immediately.

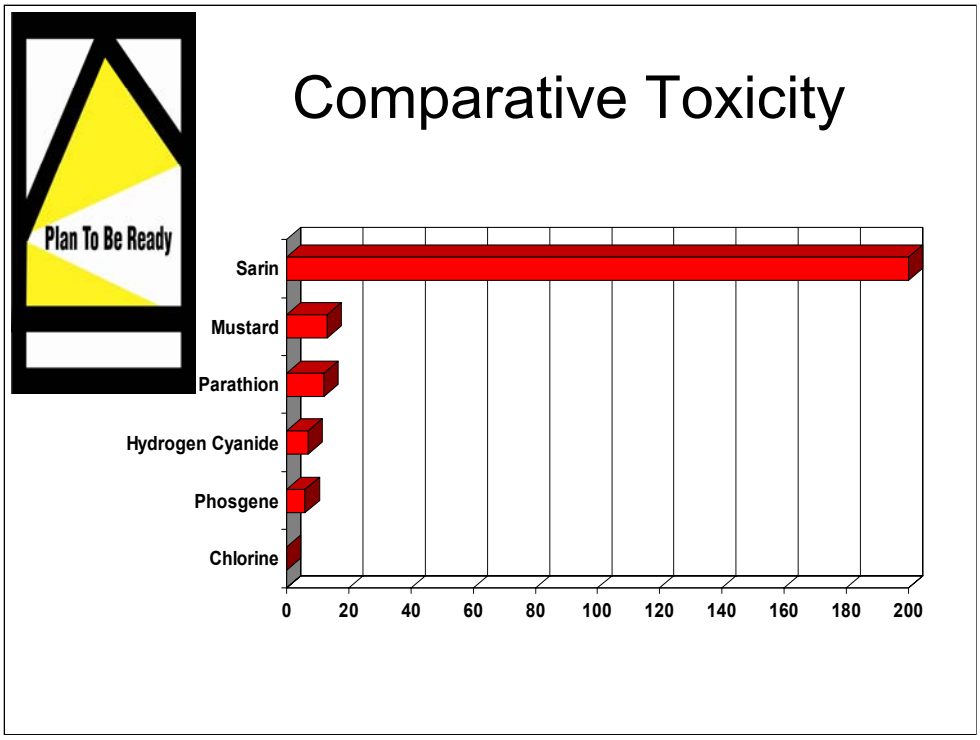
b. Removing all the clothing is the best solution, but, lacking liquid contamination, stripping down to underwear is a reasonable alternative.

c. Flush the affected area with large amounts of water.

d. Cover the person or affected area for modesty.



Which chemical agents are most persistent in the environment after release? This slide lists some of the agents we have just described and addresses the relative time it may take these agents to dissipate with chlorine being the least persistent and VX the most.



COMPARATIVE TOXICITY

This is a graphic comparison of the approximate lethalities of the agents. They are based relative to chlorine in terms of respiration.

If we use chlorine as a baseline (1.0 on the graph):

a. Phosgene (CG) is about 6 times more toxic.

b. Hydrogen cyanide (AC) is about 7 times more toxic.

c. Parathion, an insecticide ingredient, is about 12 times more toxic.

d. Mustard (H) is about 13 times more toxic.

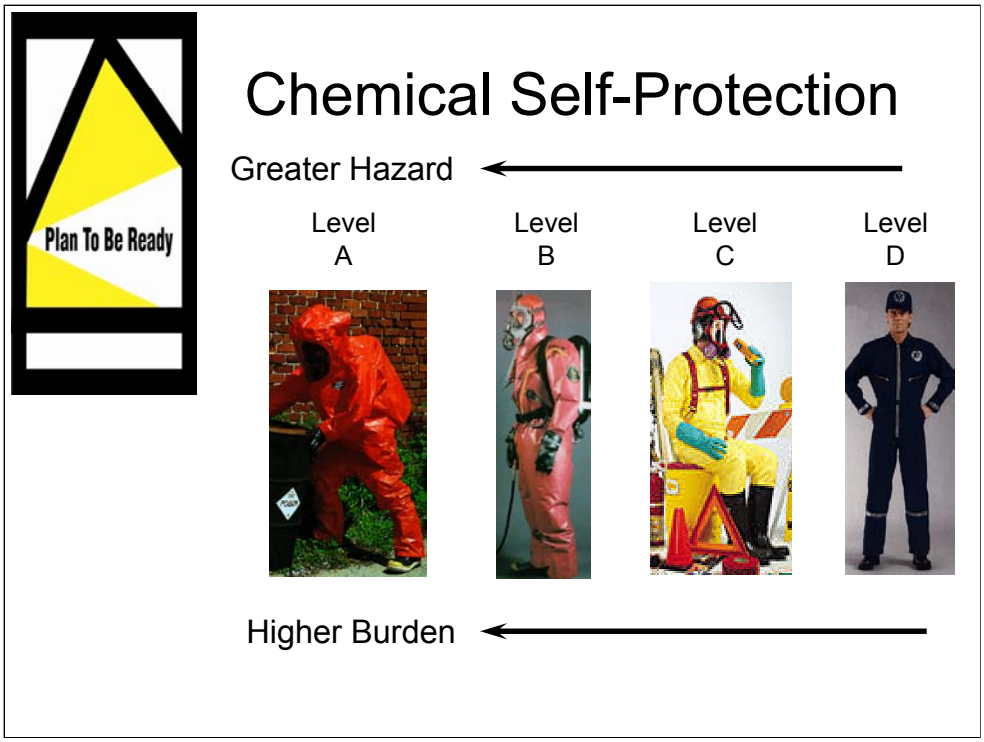
e. Sarin (GB) is about 200 times more toxic.

For skin toxicity, less than a pinhead of mustard agent will result in a small blister. Less than a pinhead of nerve agent can be lethal.

Chemical Terrorism Generalizations

- All chemical terrorism agents are heavier than air (except hydrogen cyanide).
- Time of onset to start of symptoms can indicate extent of exposure.
- May need to monitor well-appearing persons up to 24 hours.

These are some “take home” messages associated with chemical agents.



CHEMICAL SELF-PROTECTION

The following information is provided to explain the type of protective clothing and breathing equipment necessary to use to prevent exposure to chemical agents. Hazardous material workers and other emergency workers may be required to have expertise in the use of the this equipment.

a. Level A. This is the highest level of protection afforded by personal protective clothing. It is a fully encapsulating suit with SCBA or a tethered air supply. It provides maximum protection from liquids and vapors. The drawbacks to this level are that it is very difficult to work in, limits communications, and is hot and heavy. The most frequent causes of injury to responders in Level A are slips, trips, and falls. Level A protection must be worn when entering an environment where the type of agent and concentration are unknown.

b. Level B. This level of protection is similar to Level A, but is not fully encapsulating. It provides maximum respiratory protection (through SCBA or tethered air) and splash protection, but does not provide the level of vapor protection provided by Level A.

c. Level C. This level of protection consists of a respirator and a protective outer garment. Although the outer garment provides some splash protection, it does not provide vapor protection. Level C may be worn in the Warm Zone if vapor concentrations are below IDLH.

d. Level D. This level consists of normal work clothing and should only be worn in the Cold Zone. It affords no protection from any of the possible WMD agents.

Level A

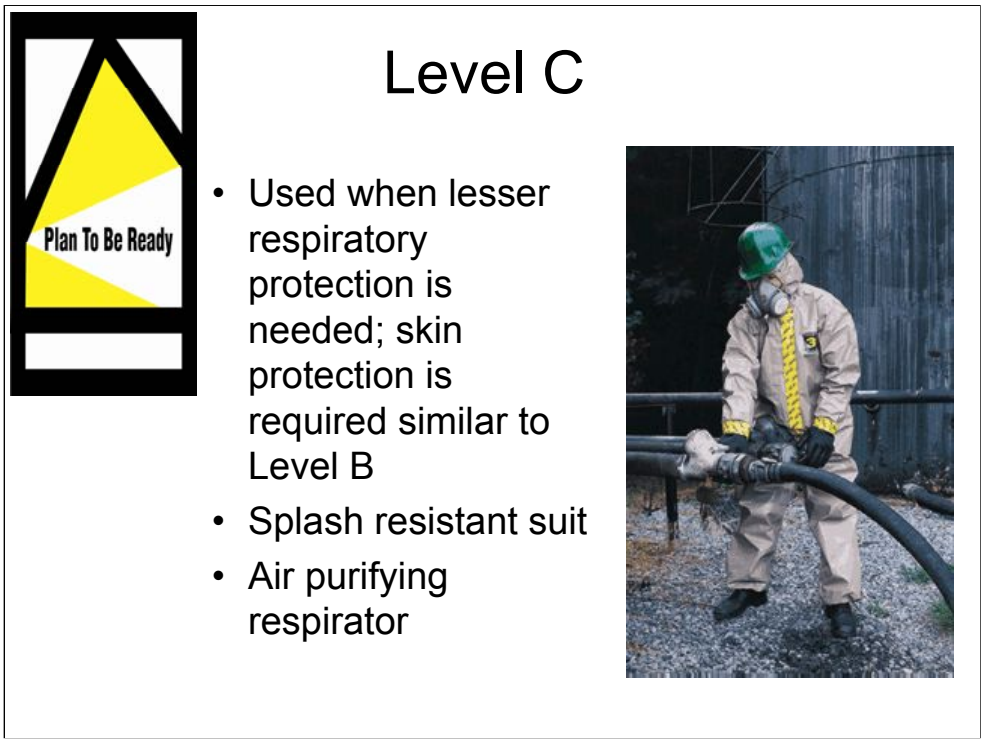
- Used when highest level of respiratory and skin protection is needed
- Fully encapsulated suit
- Self contained or airline breathing apparatus

This may be an example of a worker being protected from exposure to a nerve agent. All skin and the respiratory system is protected. Air is supplied (not filtered). Certain motion is hampered by wearing the this suit but protection is maximized.

Level B

- Used when highest level of respiratory protection is needed but lesser skin protection is required
- Splash resistant suit
- Self contained breathing apparatus

This worker is possibly exposed to a choking agent. Air is supplied (not filtered) and the skin is shielded by a suit with lesser protective ability than the level A suit.



This level C suit might be protecting the worker from a low level chemical exposure. The suit affords the same protection as a Level B, and the air is filtered through cartridges on a respirator mask. To use this respiratory protection, the identification of the chemical must be known to choose the correct cartridge.

Level D

- Used as work uniform and not in presence of skin or respiratory hazards
- Little or no protection against chemical hazards

Level D is routine clothing required at a construction or production site. The workers here are wearing hardhats, coveralls, work boots (perhaps with steel tips), and maybe hearing protection and safety glasses. This level provides little or no protection from chemical hazards.

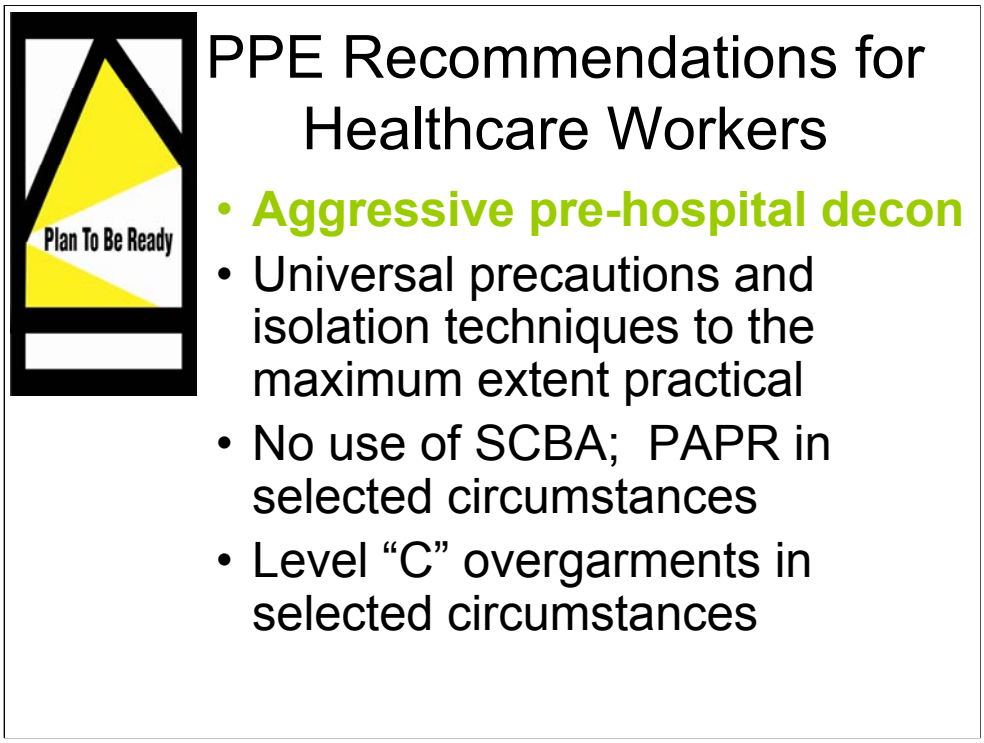
Health care workers in an operating room environment typically wear no protection against chemical hazards. To treat patients with chemical exposures, additional protection would be required if decontamination was not complete or if patients/victims were “off gassing.”

The following slides demonstrate respiratory protection devices. It is not expected that you would be required to wear any of the respiratory equipment or protective suits we are discussing, but to have a knowledge of the importance and uses for the equipment.

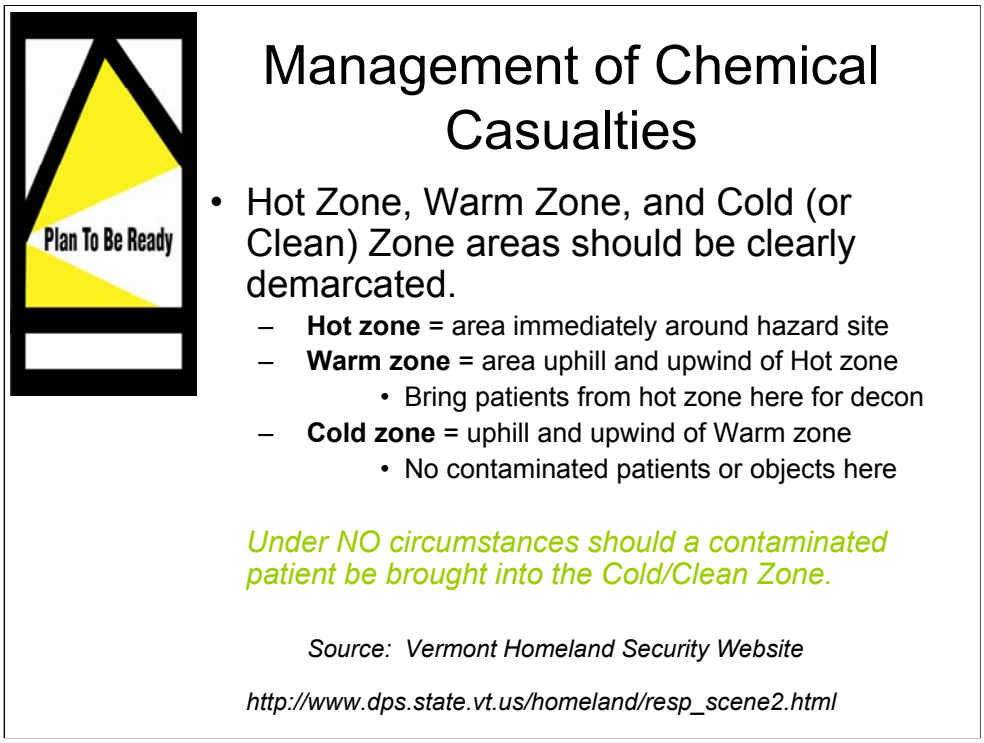
This is the type of breathing apparatus used with Level A and B suits.

Examples of air purifying respirators with cartridges.

This respirator filters air, but the air is forced into the cartridges and does not rely on the user breathing in the air through the filters.



Patients are decontaminated **before** they are seen in the emergency room. If patients who still have chemical contamination on clothing or skin are treated in the emergency room, the patient care site will be contaminated. The emergency room will no longer be an emergency room, but will become a decontamination area and the use of an effected ER will be lost.



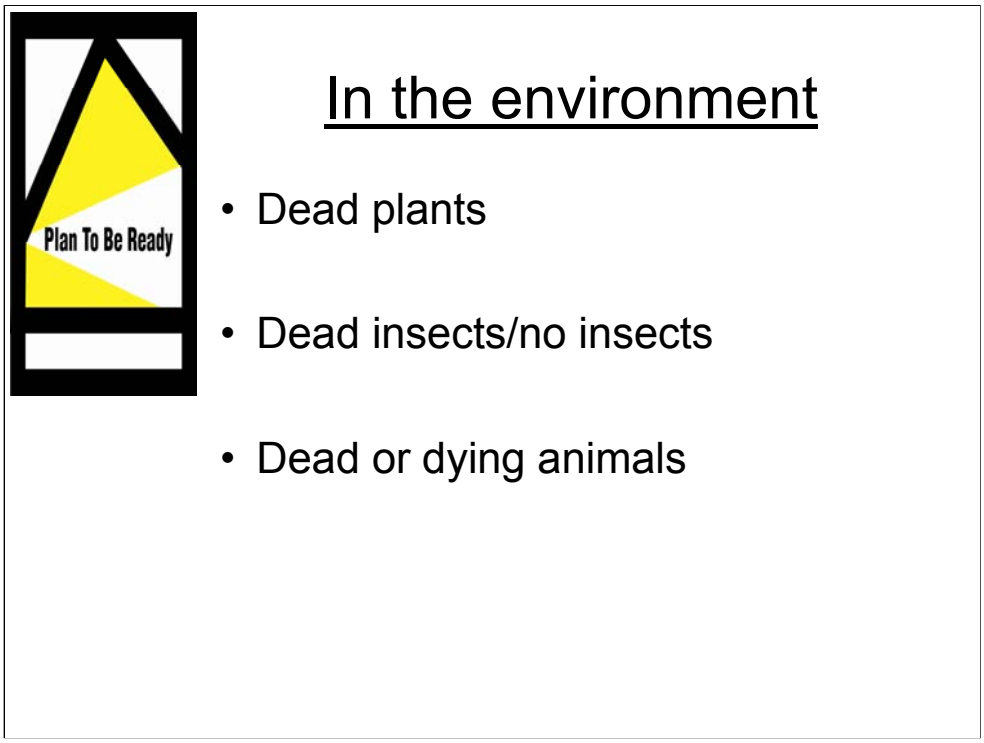
What are the zones where patients/victims receive decon and treatment?

The Hot Zone is the area immediately around the hazard. This area may change depending upon the wind direction and time it takes to dissipate the chemical.

The Warm Zone is the area uphill and upwind of the Hot Zone. This is where decontamination will take place. The Cold Zone is the area uphill and upwind of the Warm Zone. Patient care can take place here.

Chemical Agent Release

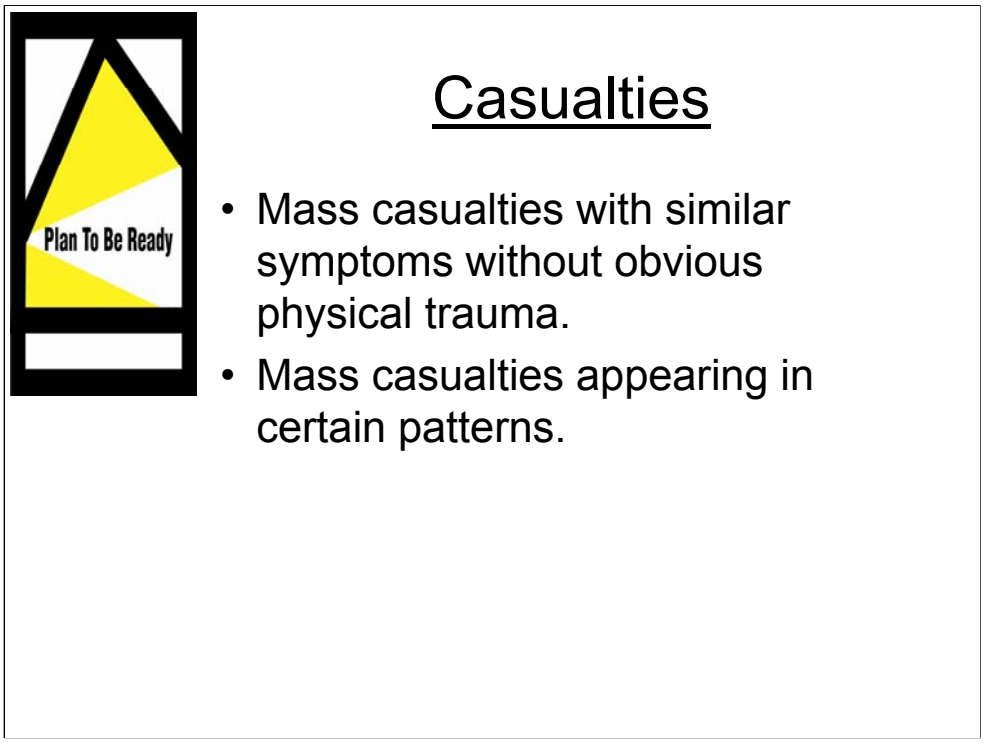
- In an ideal situation, awareness of a chemical agent release will result from early detection by appropriate detection systems which provide information on the agent released, or from a report of an accident conveying similar information. But… the following information will help better prepare you for an unexpected event.



Some chemicals will quickly kill off plant life, so unusual patterns of dead grass, flowers, etc. may indicate dissemination of chemical warfare agents.

Chemical agents may kill or drive off insects; nerve agents may act sufficiently rapidly that large numbers of dead insects may be seen on the ground.

Chemicals that injure humans will usually affect animals, although sometimes in different ways and at different speeds than humans. If groups of animals seem to be dying at the same time without obvious cause, this suggests a chemical attack.



Chemicals tend to affect people at roughly the same time, so release of a chemical agent will tend to produce a group of casualties at locations near the release. An exception to this is the mustard agents. Due to the latent period between exposure and appearance of symptoms for mustard casualties, it is possible that casualties would appear at separated locations to which they had traveled after exposure, possibly over a period of several hours.

Chemicals used to poison food or drink will affect only those eating or drinking the tainted materials; the rapid action of most poisons will tend to produce casualties at/near the dining location without affecting those (e.g., servers, cashiers, etc.) who don't eat. Chemicals disseminated as vapors or aerosols will tend to move with the wind if outside, producing a sequential appearance of casualties on exposure to a chemical agent.

Chemicals disseminated as vapors or aerosols inside a structure will affect those entering the structure.

Other

- Odors
- Unexplained deposits of material in an area where casualties occur.
- Spraying activity in inappropriate areas
- Abandoned equipment that might have been used to produce a spray or a powder aerosol.
- Explosive devices that seem to misfire or explode weakly, scattering liquids or solids about.

Not usually reliable, as incidents involving casualties usually involve diverse odors, but some agents do have distinctive odors

Liquid droplets or puddles - no rain or watering going on

Dust or powders

There would ordinarily be no reason for a crop duster to appear over a residential area or for a lawn service to be firing up their sprayers in a parking lot.

The liquids or solids may be a chemical agent. - Remember in any incident involving an explosive device that there may be additional devices set for later times to injure responders.

What to do to react to a CHEMICAL INCIDENT

- **DO NOT enter the agent cloud without protective equipment.**
- **If you are inside and the agent has been released inside, move away from the release point and get outside.**
- **If you are inside and the agent has been released outside, stay inside**
- **If you are outside and the agent has been released inside a structure, stay outside and move away from the structure <u>without passing through the agent cloud.</u>**

  If you are outside and the agent has been released outside, move away from the release point <u>without passing through the agent cloud.</u>

You will simply become another casualty - In the Tokyo Subway attack, deputy station masters Kazumasa Takahashi and Tsuneo Hishinuma soaked up the liquid with newspapers and actually picked up at least one of the sarin-containing bags and put it into a plastic bag. Their heroic actions undoubtedly saved many lives by confining at least some of the agent, but cost them their lives. Should you find yourself in a position where you wish to act to confine the agent, consider covering the agent with something ready to hand that is relatively absorbent and/or vapor resistant, such as a blanket or rain coat, so that you do not come into direct contact with the agent, and do not linger after you have done so.

The agent will be at least partly confined inside the structure. - if you can't get out directly and have choices, moving up (without passing through the cloud) and putting closed doors between you and the release point are usually good options.

In a Building

Close windows and doors, close fireplace dampers, and shut down air conditioning/heating systems that draw outside air in. - While few buildings are airtight, exchange of air between the interior and exterior of buildings, especially modern buildings, tends to be slow, and so there will generally be a lag in the build-up of the concentration of an externally released agent inside a building. - Locking doors may produce a better seal, but will block access for rescuers and for others outside.

Tape, such duct tape, can be used to produce a better seal around doors and windows.

Try to shelter in a room with a telephone so you can contact assistance.

Move to upper floors (but not outside onto a roof) if possible. - Most chemical agents are heavier than air.

Close interior doors behind you. - This provides an additional barrier to any agent that does penetrate the building.

Inside a car or other vehicle

Roll up the windows and close the vents/set to re-circulate

Once outside the agent cloud, open the windows so that any agent that has gotten inside the vehicle will be diluted by clean air.

Move upwind of the structure if possible. - The agent cloud will tend to move with the wind. Remember the wind may shift; <u>do not</u> stop immediately upwind.

Move to higher ground if possible. - Most chemical agents are heavier than air.

Move upwind of the release point if possible <u>without passing through the agent cloud.</u>

If it is impossible to move out of the path of the cloud, if possible go inside a building to shelter. While few buildings are airtight, exchange of air between the interior and exterior of buildings, especially modern buildings, tends to be slow, and so there will generally be a lag in the build-up of the concentration of an externally released agent inside a building.

If it is impossible to find shelter or to move outside the path of the cloud, move downwind as rapidly as possible. - while you may not be able to move faster than the cloud, the further you move from the release point the lower the concentration of agent will become as it is diluted by the air. - If you have to move at an angle to the wind direction, try to move in a direction that will take you toward the nearest edge of the cloud.

- If you don't know where the cloud edge is, pick a direction and always move in the same direction (if possible) anytime you must move at an angle to the wind direction.

THINGS TO REMEMBER ABOUT WHERE CHEMICAL AGENTS MAY GO

- **Chemical agents will tend to travel with the wind, and THE WIND MAY SHIFT**
- **Buildings will tend to channel the cloud, sometimes in unexpected directions, such as upwind.**
- **Chemical agent vapors may collect in low spots.**

Be sure you know what direction the wind is moving, as buildings and geography may interact with the winds to produce localized air movements. Knowing the actual wind direction is important for determining isolation distances and evacuation routes.

Chemical agents may travel upwind for short distances along building walls as a result of eddies. - Chemical agent clouds will tend to travel down streets oriented parallel to the wind direction, but they will also be channeled along side streets, where they may move at right angles to the wind direction or even upwind.

THINGS TO REMEMBER ABOUT WHERE CHEMICAL AGENTS MAY GO

- **Chemical agent vapors may collect in recesses (alcoves, recessed doorways, etc.).**
- **Chemical agents may settle out on surfaces, especially near the initial release point. THIS DOES NOT MAKE THEM HARMLESS.**
- **Chemical agents will eventually penetrate buildings and, once inside, will tend to stay there**

Buildings may create areas (areas of dead air or vortices and eddies) in which substantial concentrations of agent vapors may be collected.

THINGS TO REMEMBER ABOUT WHERE CHEMICAL AGENTS MAY GO

- Hydrogen cyanide, with a vapor density of 0.94 relative to air, is an important exception to the general statement that most chemical agents are heavier than air. Its vapor density is sufficiently close to that of air, however, that other factors - convection, wind currents, etc.- will usually be more important in estimating where a cloud will travel.

Adequate planning and regular training are key to preparedness of chemical events

Thank you.

Chemical Terrorism Preparedness
Short Version
PowerPoint Presentation Guidelines

To create the short version of this Power Point Presentation delete the following slides from the previous presentation:

Slide 2 – Weapons of Mass Destruction
Slide 6 – Industrial Chemical Properties
Slide 8 – Blister Agents
Slide 9 – Nerve Agents Properties
Slide 10 – Pinpointing of Pupils
Slide 11 – Nerve Agent Treatment
Slide 17 – Level A Description
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Slide 19 – Level C Description
Slide 20 – Level D Description
Slide 21 – Surgical Protective Clothing
Slide 26 – PPE Recommendations for Healthcare Workers

6. Radiological Agents

Introduction to Weapons of Mass Destruction

Radiation Terror Preparedness

What is a Rem?

Rem stands for “roentgen equivalent mean”. The rem is a unit used to derive a quantity called equivalent dose. This relates the absorbed dose in human tissue to the effective biological damage of the radiation. Not all radiation has the same biological effect, even for the same amount of absorbed dose. Equivalent dose is often expressed in terms of thousandths of a rem, or mrem. To determine equivalent dose (rem), you multiply absorbed dose (rad) by a quality factor (Q) that is unique to the type of incident radiation.

Source: http://www.physics.isu.edu/radinf/terms.htm

Introduction to Weapons of Mass Destruction

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Introduction to Radiological Terrorism Preparedness

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Radiation terror is arguably the least familiar category of terrorism for the public health sector. We will discuss basic concepts of radiation safety and protection, as well as unique risk perception and risk communication issues in radiation terror preparedness and response.

Types of Radiation: Electromagnetic *vs*. Particulate

- **Electromagnetic radiation**
  - UV, visible light, x-rays, EMFs
  - no mass, no charge
- **Particulate radiation**
  - alpha particles, beta particles, neutrons
  - mass and (alphas and betas) charge

In order to understand radiation terror, we must first understand some basic concepts of radiation science.

There are two basic types of radiation: electromagnetic and particulate.

Electromagnetic radiation has no mass and no charge. When you hear the word “electromagnetic”, you should think “rays” since x-rays and UV rays are examples of electromagnetic radiation.

Particulate radiation, as its name suggests, involves “particles”, such as alpha particles and beta particles. Unlike electromagnetic radiation, particulate radiation has mass and (in the case of alpha and beta particles) charge too.

Types of Radiation: Ionizing *vs*. Non-Ionizing

- **Ionizing radiation** is radiation with sufficient energy to eject electrons from atoms.This process is called *ionization.*
- **Non-ionizing radiation** is radiation without sufficient energy to produce ionization.

✓ Radiation terror uses ionizing radiation.

The concept of ionization – which means kicking out an electron from an atom – is a very important concept for understanding radiation terror.

Ionizing radiation is radiation that has enough energy to kick out an electron from an atom.

In contrast, non-ionizing radiation is radiation that does not have enough energy to kick out an electron from an atom.

***Important:* when we talk about radiation terror, we are ONLY talking about ionizing radiation (i.e., radiation that has enough energy to kick out an electron from an atom).**

Ionizing Radiation

- **Particulate**
  - alphas, betas, neutrons
  - not very penetrating
- **Electromagnetic**
  - x-rays, gamma-rays
  - penetrating

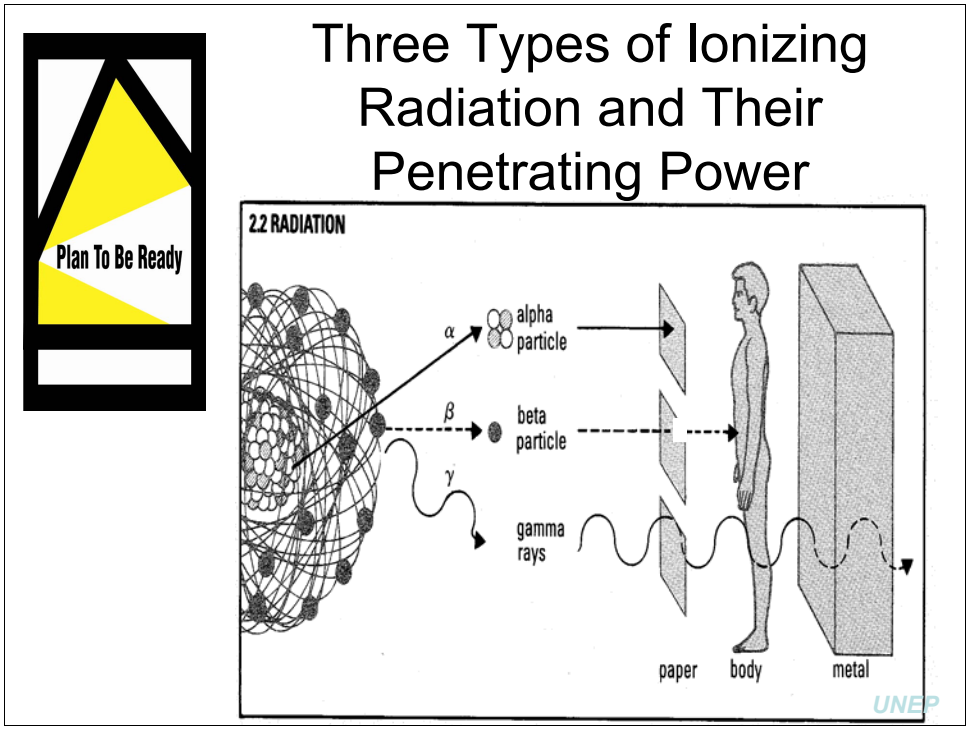
✓ Radiation terror uses both particulate and electromagnetic ionizing radiation.

There are two types of ionizing radiation: *particulate* ionizing radiation and *electromagnetic* ionizing radiation.

Particulate ionizing radiation (e.g., alpha particles and beta particles) are not very penetrating.

Electromagnetic ionizing radiation (e.g., x-rays and gamma-rays) is penetrating.

***Important:* When we talk about radiation terror, we are talking about *both* types of ionizing radiation: i.e., *electromagnetic* ionizing radiation and *particulate* ionizing radiation.**



This illustration depicts the different penetrating powers of 3 types of ionizing radiation. On top, we see that the alpha particle is the least penetrating (it doesn't even penetrate a piece of paper!). In the middle, we see the beta particle, which is modestly more penetrating than the alpha particle (it penetrates paper but doesn't penetrate the body). Remember, alpha and beta particles are examples of particulate ionizing radiation, which is not very penetrating.

On the bottom of this diagram, we see the gamma ray. As we saw on the previous slide, the gamma ray is a form of electromagnetic ionizing radiation, which is very penetrating. As we can see on this slide, the gamma ray can penetrate paper, the body, AND a block of metal!

Looking at this picture, one might think that alpha and beta particles are rather "weak" since they are not very penetrating. Don't be fooled by this, however! When alpha or beta particles get inside the body (by ingestion, absorption, or inhalation), these particles can do tremendous amounts of damage internally at the cellular level.

Sources of Ionizing Radiation

- **Radionuclides**
  - Atoms that spontaneously undergo radioactive decay
  - Emit radiation upon decay
  - Characterized by mode of decay and half-life
  - Are always “on”
- **Machines**
  - Electron and x-ray sources
  - Can be switched on and off

✓ Radiation terror uses radionuclides.

There are two basic sources of ionizing radiation: radionuclides and machines. Radionuclides are simply atoms that decay spontaneously, emitting radiation in the process. The term half-life refers to the amount of time it takes for half of this decay process to occur for a given radionuclide. Radionuclides can be thought of as always turned “on”.

In contrast, machines can be switched on an off. An example of a machine is an X-ray machine in a hospital.

<u>Important:</u> when we talk about radiation terror, we are ONLY talking about radionuclides (i.e., you would not see an X-ray machine used in a radiation terror event!).

Some Important Dirty Bomb Radionuclides

- Cobalt-60 (5.3 yr $T_{1/2}$)
  - therapy, research, industrial radiography, food irradiation
  - 13,000 Curies max source
- Cesium-137 (30 yr $T_{1/2}$)
  - research, industrial radiography, irradiators
  - 200 Curies max source
- Iridium-192 (74 day $T_{1/2}$)
  - therapy, industrial radiography
  - 25 Curies max source
- Americium-241 (432 yr $T_{1/2}$)
  - industrial radiography
  - 1 Curie max source

You may have likely heard the term “dirty bomb” before in the media. This is simply conventional explosive bundled together with a radionuclide. A dirty bomb is more formally known as a “radiological dispersal device” (RDD). This slide depicts the four most likely radionuclides that might be used in a dirty bomb, along with the conventional uses of these radionuclides. As we will see, the actual amount of radiation given off by a typical dirty bomb would be low; in a very real sense, therefore, a dirty bomb is much more of a *psychological* weapon than a *physical* weapon for an affected community.

Irradiation

- **External**
  - Radiation source is *outside* the body
  - Most risk from x-rays or gamma-rays
    - ✓Are able to penetrate into the body
- **Internal**
  - Radiation source is *inside* the body
  - Most risk from alpha and beta particles
    - ✓Deposit a lot of energy over short distances

There are two potential sources of radiation with respect to the body: external radiation (source is outside the body) vs. internal radiation (source is inside the body). When we talk about external irradiation, we are most concerned about x-rays or gamma-rays (electromagnetic ionizing radiation).

As we discussed earlier, when we talk about internal irradiation, we are most concerned about alpha particles and beta particles (particulate ionizing radiation), that can do tremendous internal damage at the cellular level when ingested, absorbed, or inhaled into the body.

Exposure Paradigm

- Agent = ionizing radiation
  - alpha & beta particles, x- & gamma-rays
- Source = radioactive atoms
  - emit the ionizing radiation
- Exposure
  - external exposure = directly from the radiation
  - internal exposure = from radiation emitted from radioactive atoms in the body
- Vector = air, water, soil, food
  - carries the radioactive atoms into the body
- Routes of entry = inhalation, ingestion, absorption
  - how radioactive atoms enter the body

This slide summarizes the exposure paradigm to radiation. Key points to mention are that ionizing radiation can be carried into the body by any of 4 different vectors: *air, water, soil, or food*.

There are 3 different routes by which ionizing radiation can enter the body: *inhalation* (breathing in); *ingestion* (eating or drinking); or *absorption* (through the skin).

Ionizing Radiation Exposure (U.S.)

Average Annual Effective Dose Equivalent (U.S.)		Annual Dose (All Sources)	
Natural equivalent Source	Dose (mrem)*	Source	Contribution to dose
Radon	200	Radon	55%
In the body	39	In the body	11%
Terrestrial	28	Terrestrial	8%
Cosmic	27	Cosmic	8%
		Medical	15%
		Products	3%
		Other	1%

* mrem is a unit of radiation dose

One of the key take home messages is that we are ALWAYS being irradiated. The biggest source of ionizing radiation exposure in the U.S. each year (55%) is radon (you may have had your basements inspected for radon). You may be surprised to know that human beings are classified by radiation physicists as low level radioactive waste, since we give off radiation ourselves!

Ionizing Radiation Effects

- **Deterministic**
  - Severity is a function of dose
  - Threshold exists
  - Examples: skin reddening, mental and growth retardation, cataract formation
- **Stochastic**
  - Risk is a function of dose
  - No threshold
  - Example: cancer

This is an important slide for understanding risk communication of the health effects of ionizing radiation. There are two basic models for understanding these health effects.

The **deterministic** model says that as the dose of radiation increases, the severity of a given health effect increases. According to the deterministic model, there is a threshold of radiation dose below which a given health effect will *not* occur, and above which a given health effect *will* occur. All health effects of ionizing radiation, **with the exception of cancer**, follow the *deterministic* model. These deterministic health effects of ionizing radiation include reddening of the skin, mental and growth retardation of the developing fetus, and formation of cataracts in the eyes.

When thinking about the health effects of ionizing radiation, a useful phrase to remember is “cancer is unique”. Unlike all the other health effects of ionizing radiation (cataracts, skin reddening, etc.), cancer follows a special model: the **stochastic** model. The stochastic model says that as the dose of ionizing radiation increases, the **risk** (not the severity) of cancer increases. In contrast to the deterministic model, the stochastic model does not have a threshold, and there is no such thing as “zero risk” of cancer from a given dose of ionizing radiation. The risk may be very small depending on the dose, but the risk is never zero.

These concepts are important for communicating to the public about the health effects following ionizing radiation exposure. For example, it would be scientifically inaccurate to say that a person “will definitely not get cancer” from a given dose of ionizing radiation, as there is no threshold for the stochastic (cancer) model of ionizing radiation health effects!

Ionizing Radiation Effects

- Acute - deterministic effects
  - Prodromal syndrome - 100+ rem
  - Hematopoietic syndrome - 100s of rem
  - Gastrointestinal syndrome - 1000s of rem
  - Central nervous system syndrome - 10000s of rem
  - Near 100% fatality - 600 rem
- Delayed - stochastic & deterministic effects
  - Stochastic - cancer, genetic changes
  - burns, cataract formation - 100 rem threshold
  - growth & mental retardation - 10 rem threshold

This slide depicts the acute and delayed health effects of ionizing radiation. As the dose of radiation increases, the severity of the acute health effects increases (following the deterministic model) as different organ systems (e.g., hematopoietic = bone marrow vs. gastrointestinal = stomach, intestines are progressively affected with increasing dose)

Delayed health effects of ionizing radiation include cancer (which would begin to occur approximately two decades following exposure). Other examples of delayed health effects of ionizing radiation include: burns, cataracts; and growth and mental retardation of the developing fetus.

ICRP Fatal Cancer Risk

Baseline (Non-Radiogenic) Fatal Cancer Risk = 25%

Dose	Risk
10 mrem	.0005%
100 mrem	.005%
1 rem	.05%
10 rem	.5%
100 rem	5%
1000 rem	50%

It may surprise you to know that the population's baseline risk of developing a fatal cancer over the course of a lifetime is 25%. This slide illustrates the concept that a dirty bomb's health effects are relatively small for an affected community. Remember, the dose of radiation disseminated by a dirty bomb is actually quite small. So, for example, a dirty bomb imparting a dose of 10 rem of radiation (third row from the bottom of the chart) is associated with an elevation of the lifetime fatal cancer risk by 0.5 %. So…the new lifetime fatal cancer risk following exposure to a dirty bomb giving a dose of 10 rem of radiation: is 25.5% (i.e., 25% baseline + 0.5% from the 10 rem dirty bomb = 25.5%). This elevation in lifetime fatal cancer risk is miniscule in comparison to the psychological impact of the dirty bomb on an affected community!

Radiation Safety & Protection

- Exposure = Intensity x Time
- The Big 3: Time, Distance, Shielding
- Time
  - Exp ∝ Time
- Distance
  - Exp ∝ $1/d^2$
- Shielding
  - Exp ∝ 1/attenuation
  - Particulate: defined range to stop all radiation
  - Electromagnetic: exponential attenuation

This is an extremely important slide. The "Big 3" concepts in radiation safety and protection are "time, distance, and shielding". Let's look at each in turn.

Radiation exposure is proportional to the **time** of exposure. So…the less time you're exposed, the less exposure you get!

Radiation exposure is proportional to 1 divided by the **distance** squared; so…the farther you are away, from the source the safer you are in terms of exposure. For example, if I am 2 feet away from a radiation source, my exposure is $1/(2)^2 = 1/4$. If I am 3 feet away from the radiation source, my exposure drops down to: $1/(3)^2 = 1/9$!!

Radiation exposure is also a function of how much "stuff" **(shielding)** is between you and the radiation source. The more "stuff" (e.g., lead shield, concrete wall, etc.) between yourself and the radiation source the safer you are (i.e., the less exposed you are).

Radiological Terror

- Nuclear device
  - Stolen state-owned nuclear weapons or weapons components
  - Improvised nuclear devices
- Dirty bomb ("radiological dispersal device")
  - Conventional explosive device bundled with radioactive material
  - Intended to efficiently disperse radioactivity
- Attack on fixed nuclear facility
  - nuclear reactor
  - spent fuel storage depot
  - nuclear fuel reprocessing facility
  - high level waste site
- Attack on radioactive material in transit

These are the four most plausible scenarios involving radiation terror. The physical impact of a nuclear device is several orders of magnitude more severe than a dirty bomb. The crudest and most accessible form of radiation terror for terrorists would be a dirty bomb, also known as a radiological dispersal device. An attack on a fixed nuclear facility is another potential scenario of concern to homeland security. Finally, an attack on radioactive material in transit is another potential scenario for radiation terror.

Response to Bomb-Type Attack

- **Crisis management**
  - acute response
- **Consequence management**
  - long term effort
- Levels of authority
  - Federal
  - State
  - City

Response to a dirty bomb attack would involve both acute response efforts in the minutes to days after the event (crisis management), and longer term responses (consequence management) occurring during the months to years following the event. These phases would involve an interaction between federal, state, and municipal authorities.

Acute Response

- Determine that radioactivity/radiation is in the environment
  - First responders
- Determine the radionuclide(s) and amount(s)
  - Radiation strike team
- Estimate doses and geographic dose distribution
  - Radiation strike team + State environment dept
- Determine need for (and implement) evacuation
  - Radiation strike team + Health Dept + Fire/Police

This is an illustrative sequence of responses that could occur in an area following the detonation of a dirty bomb. First responders would be equipped with dosimeters that would sound alarms if a higher than expected level of radiation is detected. Based on this initial information, a team of radiation experts and HazMat personnel (radiation strike team) would determine the radionuclides involved and their amounts. The radiation strike team, in concert with the state environmental department, would estimate the doses and geographic distribution of the radioactive “plume”. Based on these assessments, public health and public safety officials would guide the community on whether to shelter in place or evacuate (or selectively evacuate), factoring in considerations of time, distance, and shielding.

Important First Responders

- Fire Dept
  - Hazmat
  - EMS
- Police Dept
  - Bomb squad
  - Patrol officers
- Strike Team
  - Health Dept
  - State Hazmat
  - Radiation Experts

Important first responders following a dirty bomb event would include fire and police departments, and could also include a “strike team” of radiation experts from the health department, HazMat, and designated radiation safety experts.

Medical Issues

- **Acute**
  - "usual" medical problems for bomb-type attack (injuries, burns)
  - acute radiation syndromes
  - patient internal contamination
- **Delayed**
  - Radiation carcinogenesis

- Note: Must consider both acute and delayed effects of *in utero* irradiation.

The medical issues following a dirty bomb event include acute and delayed issues. In addition to the usual medical problems after a bomb attack (shrapnel injuries and burns) other acute medical issues include acute radiation syndromes and internal contamination. Delayed health effects, as we have discussed, include cancer. There may be acute and delayed health effects on the developing fetus from in utero radiation exposure.

Contamination with Radioactivity

- **External contamination**
  - Radioactive atoms are on clothing or skin
  - Irradiated by penetrating radiation (x- and gamma-rays)
  - "Carry" contamination away from site on surface
- **Internal contamination**
  - Radioactive atoms enter the body by eating or drinking, breathing gases or aerosols, absorption thru skin or wound
  - Irradiated by non-penetrating radiation (α and β) emitted *within* the body
  - "Carry" contamination away from site within body

There are two basic types of contamination with radioactivity: **external contamination** (radioactive atoms on clothing or skin, or irradiation with X-rays or gamma rays); versus **internal contamination** (radioactive atoms entering the body by ingestion, absorption, or inhalation routes).

Remember that particulate ionizing radiation (alpha and beta particles) are of great health concern once they have entered the body by ingestion, absorption, or inhalation.

General Countermeasures

- External radiation exposure
  - Sheltering in place
  - Evacuation/relocation
  - Control of access to ground zero site
- Internal contamination
  - As above
  - Stable iodine (only when radioiodine present)
- Internal contamination due to ingestion
  - Control of food and water
  - Use of stored animal feeds

ICRP 1984

This slide depicts general countermeasures for dealing with external radiation exposure versus internal contamination. Please note: radionuclides of iodine are **not** likely to be used in a dirty bomb. Potassium iodide (KI) protects the thyroid **only** and must be taken throughout the exposure period to be protective for the thyroid. Since dirty bombs (the most likely form of radiation terror) would be unlikely to include a radionuclide of iodine, potassium iodide (KI) is NOT something that every citizen should have in their preparedness kits. Only individuals living in a community near a nuclear power plant should have KI in their preparedness kits (since nuclear facilities contain radionuclides of iodine.)

Order of Medical Management

- Treat and stabilize life-threatening injuries
- Prevent/minimize internal contamination
- Assess external contamination and decon
- Contain contamination to treatment area
- Minimize external contamination to medical personnel
- Assess internal contamination
- Assess local radiation injuries/burns

This is the order of medical management for dealing with victims of a dirty bomb. A rule of thumb is that public health personnel are NOT involved in decontamination of patients; public health personnel take care of patients AFTER they have been decontaminated by HazMat experts.

Triage

- Separate injured from non-injured
- Decon both groups
  - Remove clothing and double-bag
  - Wash head and hands
- Only injured allowed in ED

✓If ED becomes decon site, it is no longer an ED!

REMEMBER: if an emergency department becomes a decontamination site, it is no longer an emergency department!

One strategy for self-decontamination in the community is to tell the public to remove their clothing outside their home, double bag the clothing, then to go into their home and wash/shower copiously.

Lymphocyte Count @ 24 hrs

Lymphocyte Count (10^3 μL^{-1})	Absorbed Dose (Gray)	Lethality w/o Rx (%)
3	0 - 0.25	0
1.2 - 3	0.25 - 2	< 5
0.4 - 1.2	2 - 3.5	< 50
0.1 - 0.4	3.5 - 5	50 - 99
0 - 0.1	> 5	100

NCRP #138, 2001

The lymphocyte count at 24 hours is a very useful laboratory test to order on a patient exposed to ionizing radiation. As the chart shows, decreasing lymphocyte counts at 24 hours are associated with increased lethality without treatment.

Therapy for Internal Contamination

- I-125 or I-131
  - Thyroid blockage
  - SSKI or Potassium Iodide
- Cs-137
  - Reduction of GI absorption
  - Prussian blue
- Unknown
  - Reduction of absorption
  - Emetics, lavage, charcoal, or laxatives in cases of ingestion

This slide shows the various therapies for internal contamination by different radionuclides. If the type of ionizing radiation is unknown, it should be handled like any suspicious ingestion (emetics, charcoal, lavage, and laxatives), keeping in mind that emesis and other body fluids need to be handled as radioactive waste.

Psychosocial Issues

- Radiation is an “invisible toxin” – some attacks may be explicitly designed more for psychosocial than physical impact
- Acute and chronic psychosocial reaction is a central concern
- Risk perception is high risk – toxic hazard *per se* plus terrorist (i.e., non accidental) event
- High risk groups for psychosocial harm: children, mothers with young children, emergency workers, clean-up workers

The psychosocial aspects of radiation terror are critically important for public health personnel to understand. Radiation terror ranks extremely high in terms of risk perception, and the short and longer term mental health impacts of this form of terror must be addressed as part of a comprehensive public health response. The highest risk groups for psychosocial harm following a radiation terror event include children, mothers with young children, emergency workers, and clean-up workers.

Special Thanks for this Presentation

- Jonathan Links, Ph.D., Johns Hopkins Bloomberg School of Public Health
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- Ayanna Fews, M.B.A., MidAtlantic Public Health Training Center

Thank You

Questions?

7. Risk Communication

Risk Communication Fact Sheet
What You Need to Know about How to Talk to People about Disasters

We all communicate about risk to members of the public as well as our friends and family.

We've learned from experience that the public is NOT apt to panic in a disaster, especially if they feel comfortable that the authorities are sharing the available information with them and if the messages they hear from the authorities are consistent.

How people perceive risk may be very different from the actual risk. We can influence people's perceptions of risk in positive way, bringing their perceptions closer to the actual risk. The better they understand the actual risk, the better choices they can make about how to protect themselves and their loved ones.

The public may perceive the risk to be GREATER if:

- The risk is involuntary.
- People feel as if they have no control over the situation.
- People believe they will derive no benefit from the situation.
- The risk is manmade.
- The risk is exotic.
- The risk is potentially catastrophic.
- The risk affects primarily children or those seen as the most vulnerable.

The health department can help to positively influence the public's perception of the risk by making sure the public know that we are:

- Genuinely concerned about the public's safety.
- Calm, polite, and helpful.
- Sharing all information with the public.
- Knowledgeable and in control of the situation.
- Providing useful information.
- Taking all steps necessary to protect the public's health.

When people process information, negative messages have greater influence. Therefore:

- Avoid negative messages whenever possible.
- Focus on what is being done rather than what is not being done.
- Counter-balance negative messages by a larger number of positive or solution-oriented messages.

Cultural competency is always important, but is even more important during a crisis. Think about what cultural groups you may need to communicate with (ethnicities, religions, age, gender, occupation, and lifestyle). Find appropriate messengers before a crisis begins.

If people don't trust the messenger, they won't trust the information. If our information is to be useful, we must develop trust and credibility with everyone who we communicate with. Quick ways to do that are to:

- Use good listening skills
- Use good body language
- Emphasize that you are part of the community and therefore facing a common threat.

Show credibility by:

- Providing useful information.
- Keeping the message consistent with local, state, and federal agencies.
- Avoiding premature reassurance.

When people are upset they have difficulty hearing, understanding, and remembering information. Therefore, during a crisis, communication will be more effective if the message is kept simple, jargon is avoided, information is repeated, and written information can be provided.

During communication:

- Keep the message simple
- Be clear
- Avoid jargon
- Make ideas flow logically (i.e. high to low priority)
- Let people know what they can do

Risk Communication During a Time of Crisis: How to Talk about Disasters

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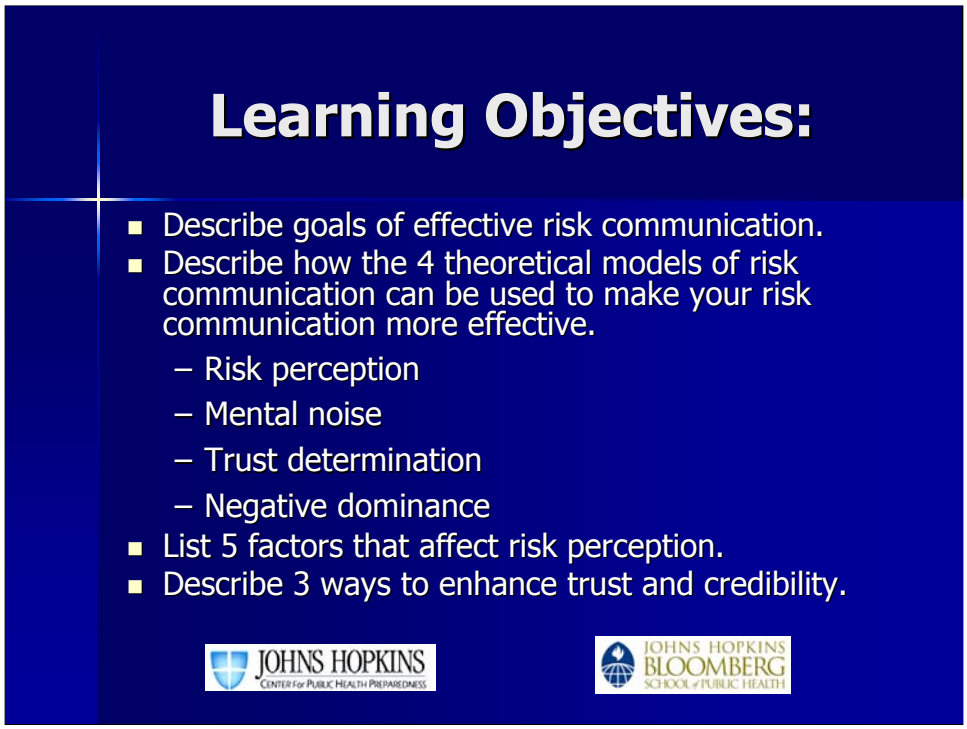
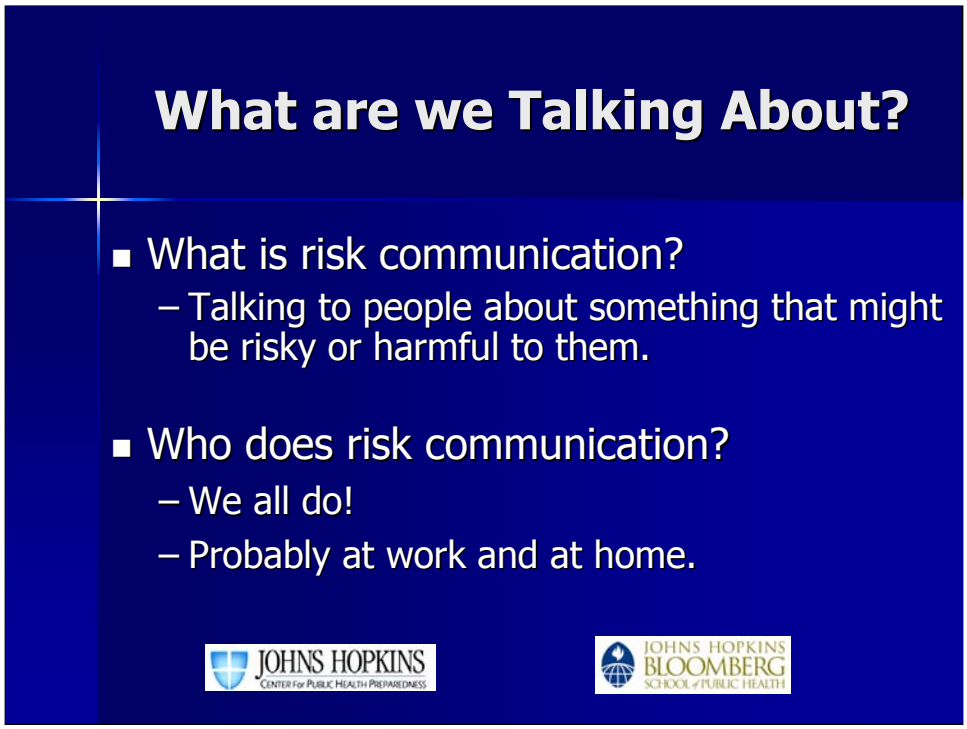


Review the learning objectives for the lecture. Explain that these 4 theoretical models are not JUST theoretical, but can be very useful in making our communication about risk more effective.



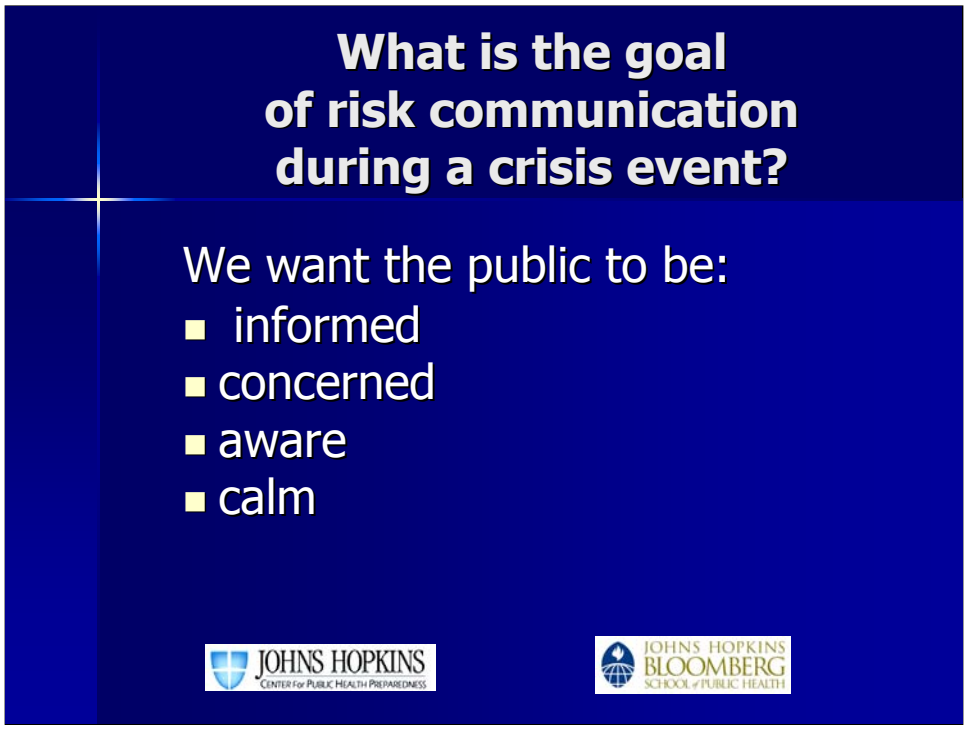
Ask the audience: “Who in here does risk communication?”

Usually only 1 or 2 hands go up. Then ask: “Who in here talks to people?”

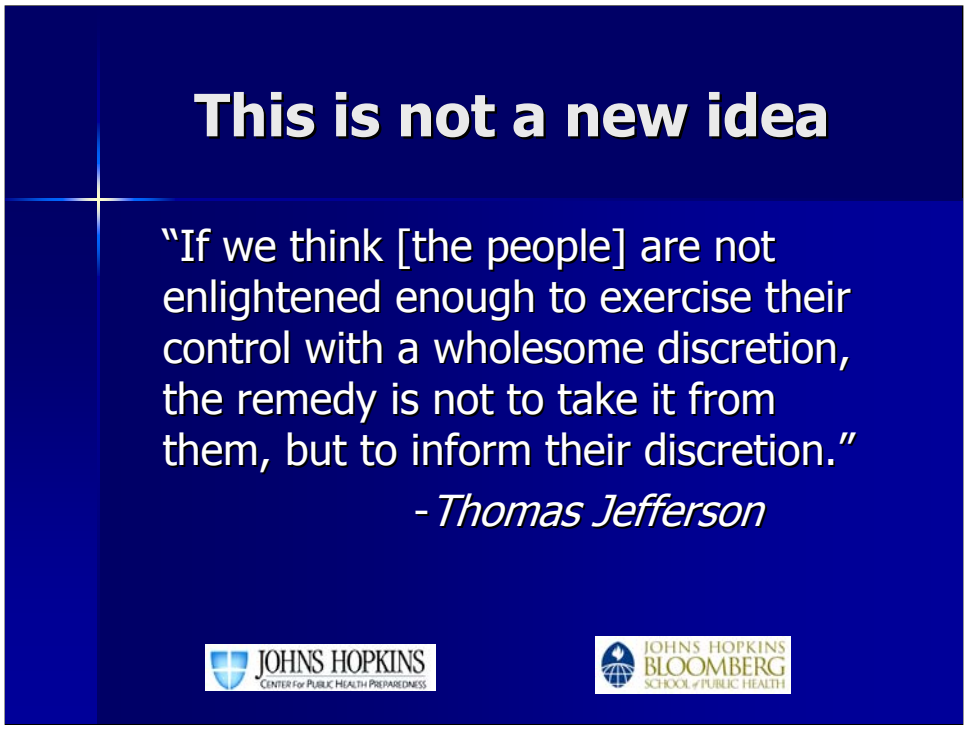
Usually most or all hands go up. Then ask: “Do you ever talk to people about something that might be *risky for them?”*

Use some kind of an example to illustrate your point such as: “When you tell the toddler—”Don’t touch that stove—it’s hot!” That’s risk communication. When you’re talking to teenagers about making good choices, that’s risk communication. Point out that it is likely that everyone in the room does risk communication—not just those who talk to the media—and they probably do it both at home and at work.

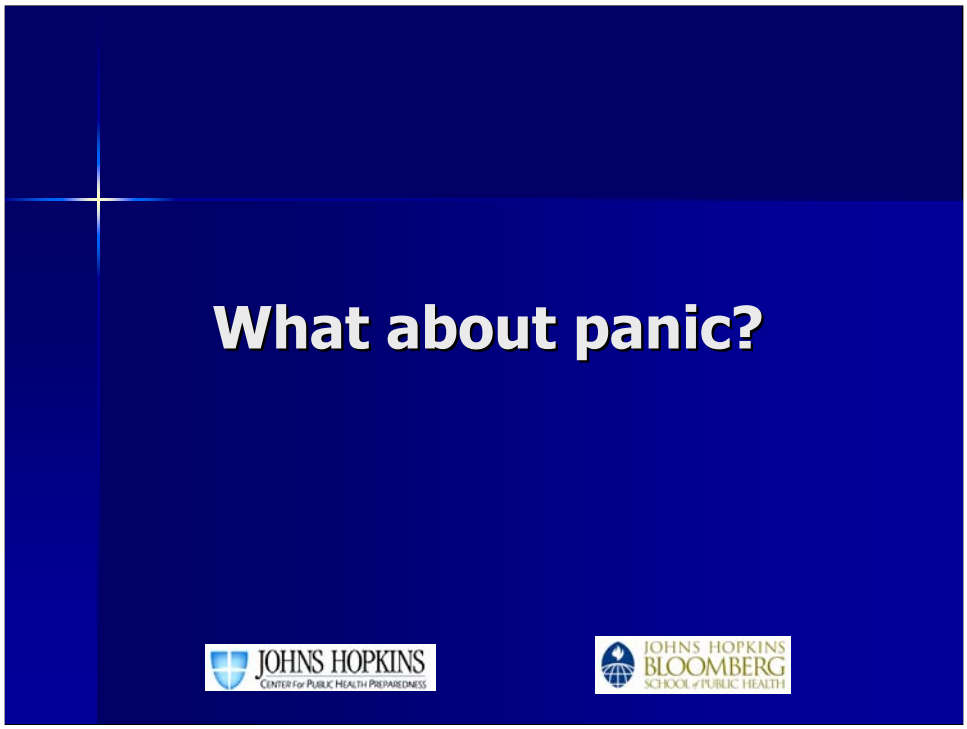
Mention that risk communication is more effective if it’s a two-way street. Sometimes that’s not practical, like with the toddler and the stove. Ask the audience how effective their communication is apt to be to teenagers about making good choices if they’re simply talking to the teen saying “don’t do this or don’t do that”. If your communication with the teen is be effective, you need to find out what kinds of questions the teen has, what concerns do they have, what kinds of situations might they find themselves in that would make it more difficult to make a good choice, etc.



So we all do risk communication every time we talk to a member of public. During a crisis event, what are the goals of our risk communication? As a result of our communication, how do we want the public to be? Get some suggestions from the audience. IF there's a crisis going on, if there's a disaster going on, do we want the public to feel like they have nothing to worry about? (no) Do we want the audience to be placated by our communication? (No, there's a crisis going on!) We want the public to have the information they need to make good choices about how to take care of the health and safety of themselves and their loved ones. We want them to be aware of their surroundings, concerned about the situation, and remain calm so that they can make good choices.



We aren't the first ones to think of this.



But what about “panic”? Should we be worried that if we tell the public too much, they might panic? (There will usually be a mixture of yes and no responses from the audience.)

History has shown us that the public tends to NOT panic during a disaster or crisis. Use an example like the World Trade Center. 50,000 people were in the WTC complex on 9/11. 3,000 people lost their lives. Not to take anything away from the tragedy of those 3,000 people, but that means that 47,000 people got out of the WTC complex alive. That doesn’t sound like panic! Think about what those people in the WTC towers had to go through that day. They walked down flights and flights and flights of stairs in the dark and the smoke with crashing noises, not knowing what might happen next, thousands of people all walking down the stairs together—but still, *most* of those people got out alive. That can’t be panic. Those people used the information that was available to them to make good choices about how to protect their safety and the safety of the people around them. They had to help each other. And that’s what we typically see as the public’s response during a disaster. There certainly may be *individuals* who might panic, but not the public in general.

Part of the concern about panic may simply be in how we use the word. It might just be semantics.

Use another example: If there were suddenly a huge explosion over there (point to side of room opposite of main doors) and we all jump up and run away from the explosion, would we be panicking? Running away from a big explosion sounds like good common sense to me. Would we be terribly frightened? I know I would be. But being terribly frightened is not the same as panic. Even if we’re terribly frightened, we can still make good choices about how to protect our health and safety—in this case by running away from the explosion.

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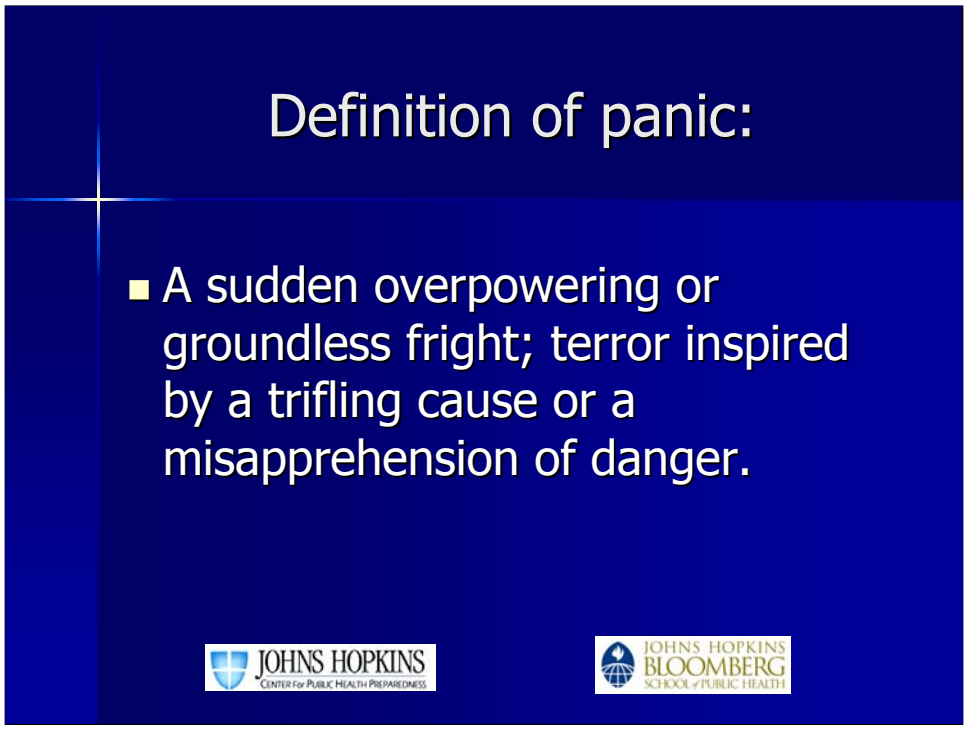
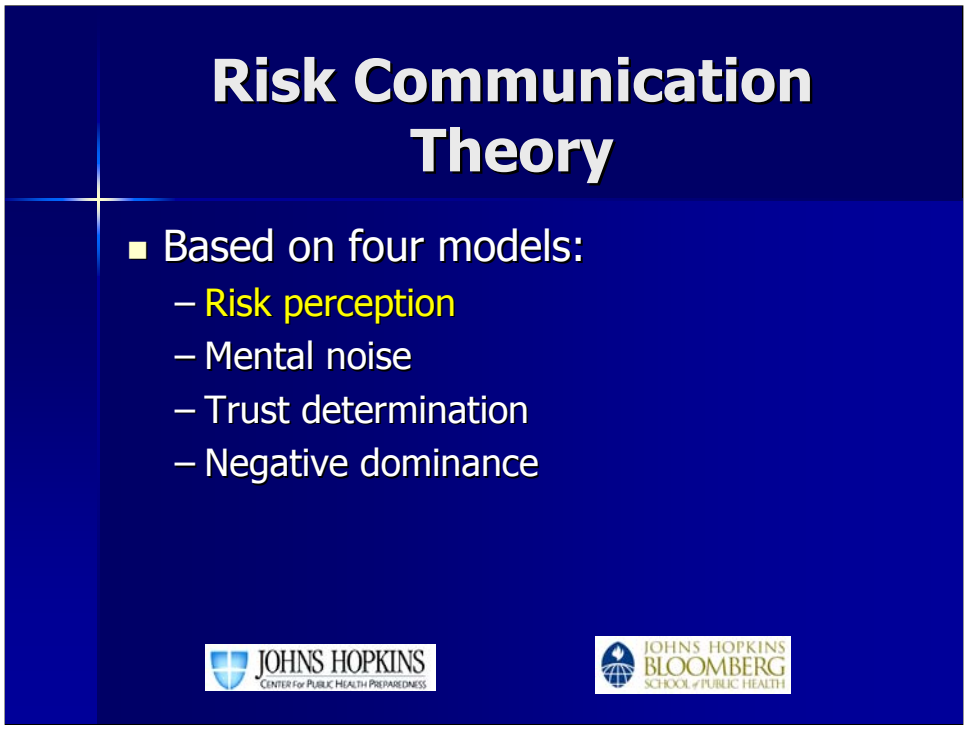
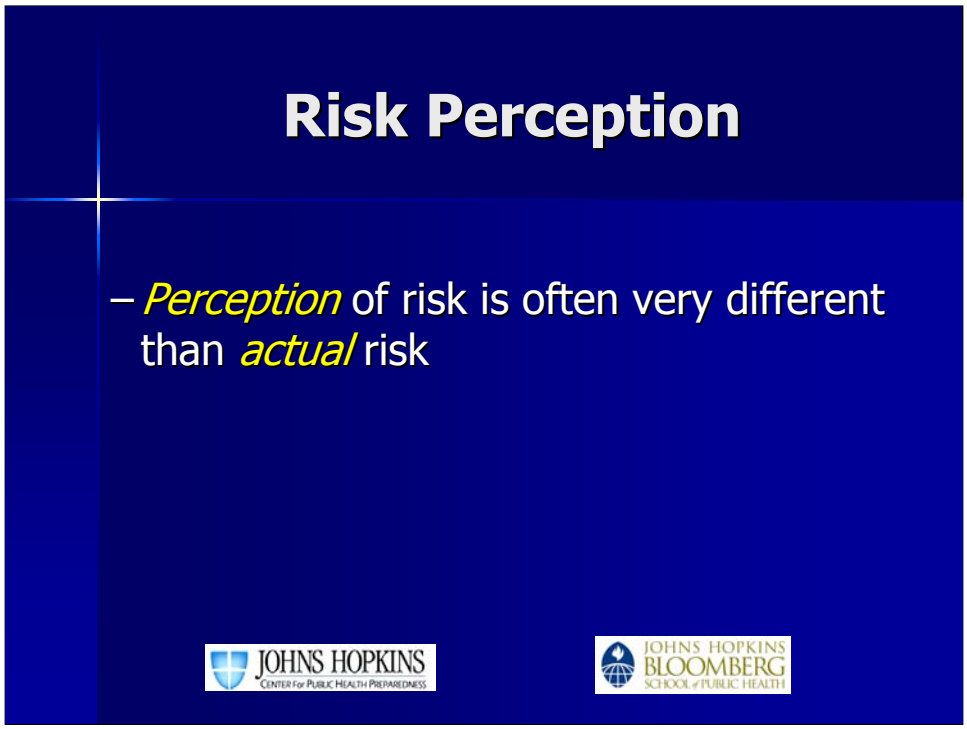
Ask for examples of what *would be panic* in this situation? The audience will usually supply responses like “not running away, being frozen in place” or “trampling each other to get out”.



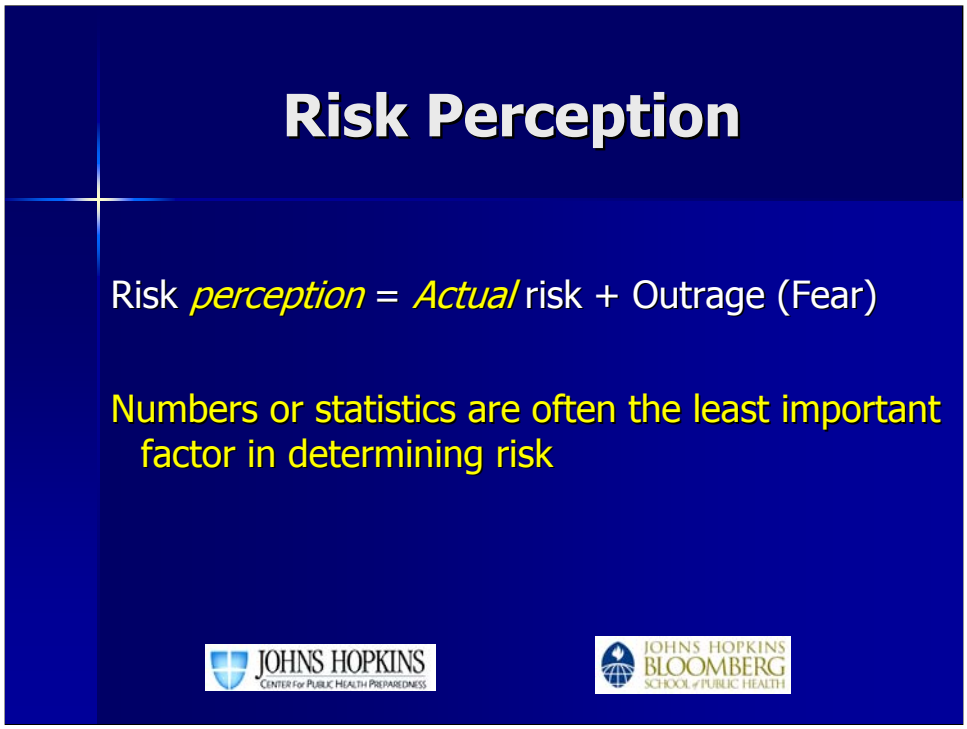
The Webster Dictionary's definition of panic. Emphasize "groundless", "trifling", and "misapprehension".



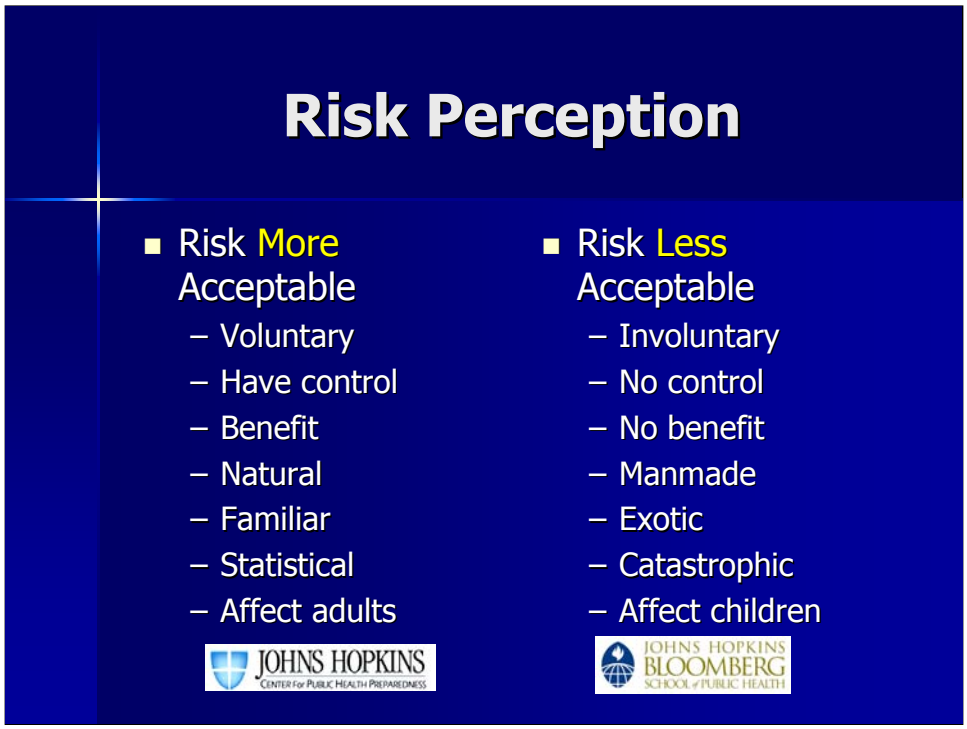
We're going to spend some time now talking about risk perception because its so important to communicating about risk.



How people *perceive* risk is often very different that the *actual* risk. Contrary to what many health professionals believe, the perception of risk is not necessarily changed by quoting statistics or pointing out how the risk in question compares to more familiar, everyday risks. Perception of risk can be influenced, however, so a good understanding of how perceptions are influenced is useful.



How people perceive risk is usually some combination of the actual risk and a variety of other factors such as outrage, fear, past experiences, even perhaps what our Grandmother told us when we were 4 years old.



These are lists of what kinds of factors affect people's perception of risk. If something is seen as more acceptable, then its also usually seen as less risky. Ask the audience to volunteer some examples of each of these factors such as:

What is an activity that clearly can be risky for people, but if they choose to accept that risk *voluntarily*, the risk may seem less to them.

Voluntary-extreme sports such as bungie-jumping, driving, having sex, smoking. (Smoking is an especially good example because it can also be used to illustrate how nonsmokers may perceive the risk of secondhand smoke—they didn't choose to accept the risk of smoking voluntarily.

Have control—driving (often risky activities will fit nicely into several categories), having sex, some occupations like firefighting

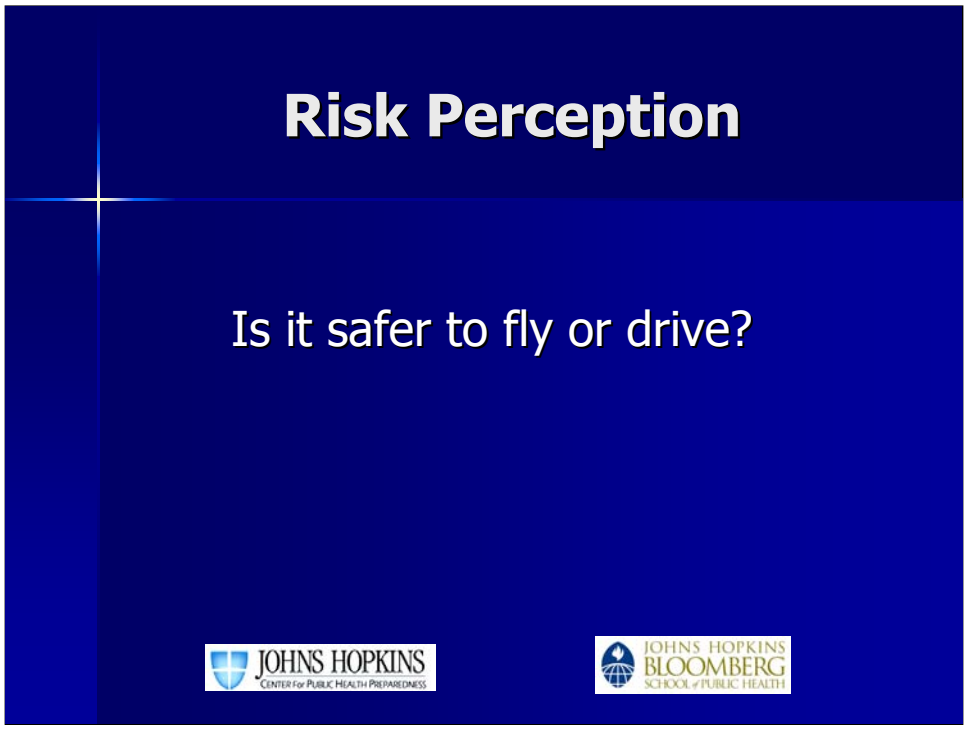
Benefit-taking a medicine, getting surgery, getting a vaccination, gambling

Natural vs. Manmade-Point out that this is especially important when we're talking about terrorism. Ask the audience "Which do you think scares people more, the idea that a hurricane might happen in their community or a terrorism attack might happen in their community?" The audience will answer "terrorism". Emphasize that part of what scares people is the idea that terrorism is a manmade occurrence.

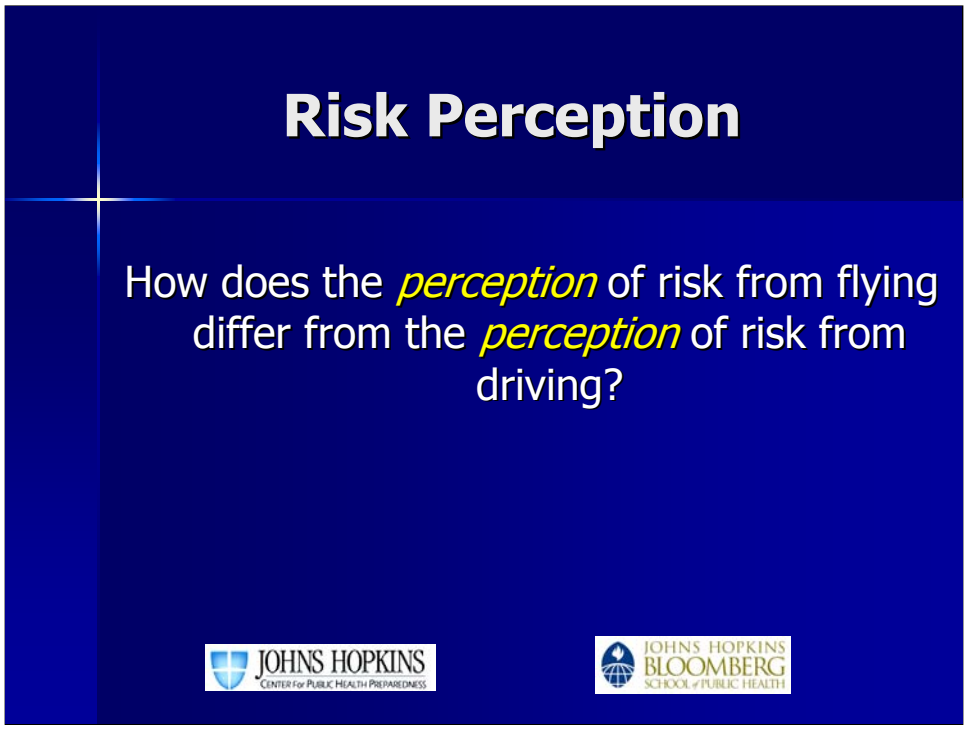
Familiar vs. exotic-Ask the audience "How many people die every year in this country from pneumonia, a lot or a few?" They'll answer "a lot".

Then ask "How many people died in 2001 from anthrax, a lot or a few?" They'll answer "a few" (6 to be exact). Then ask "Which scared people more?" The audience will respond "anthrax" and emphasize that part of that reason is that pneumonia is familiar and anthrax is exotic.

Statistical vs. catastrophic-Unless someone volunteers something quickly, which doesn't usually happen, I mention that we'll talk more about this category in a moment.



Consider this example: Most everyone is familiar with the statistics that flying is actually safer than driving. How many people, as they're getting into their cars every morning, think to themselves that driving is very risky and they might not get to their destination without having an accident? How many people, even those who are not necessarily *afraid* of flying, are a little more nervous when getting on a plane? Why is that? We KNOW that *statistically*, flying is safer than driving, so why are we more nervous about flying?



We're more nervous about flying than driving because our *perceptions* of the risk of flying are not exactly the same as the *actual* risk of flying versus driving.

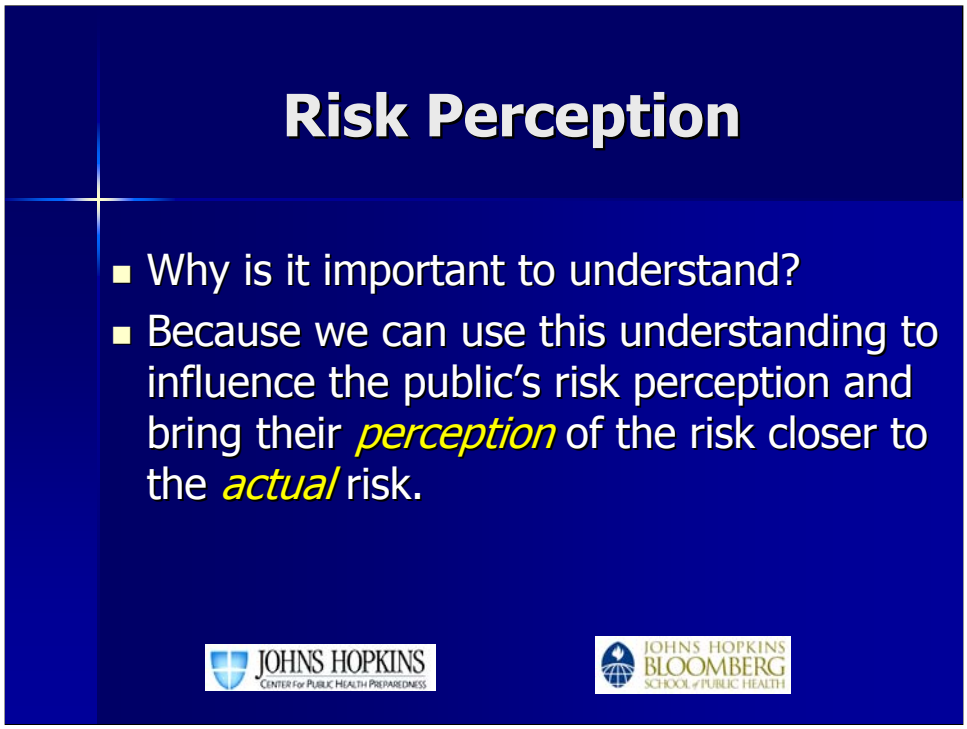
Which of these factors help influence the perception of the risk of flying vs. the risk of driving?

Driving is familiar—we do it all the time

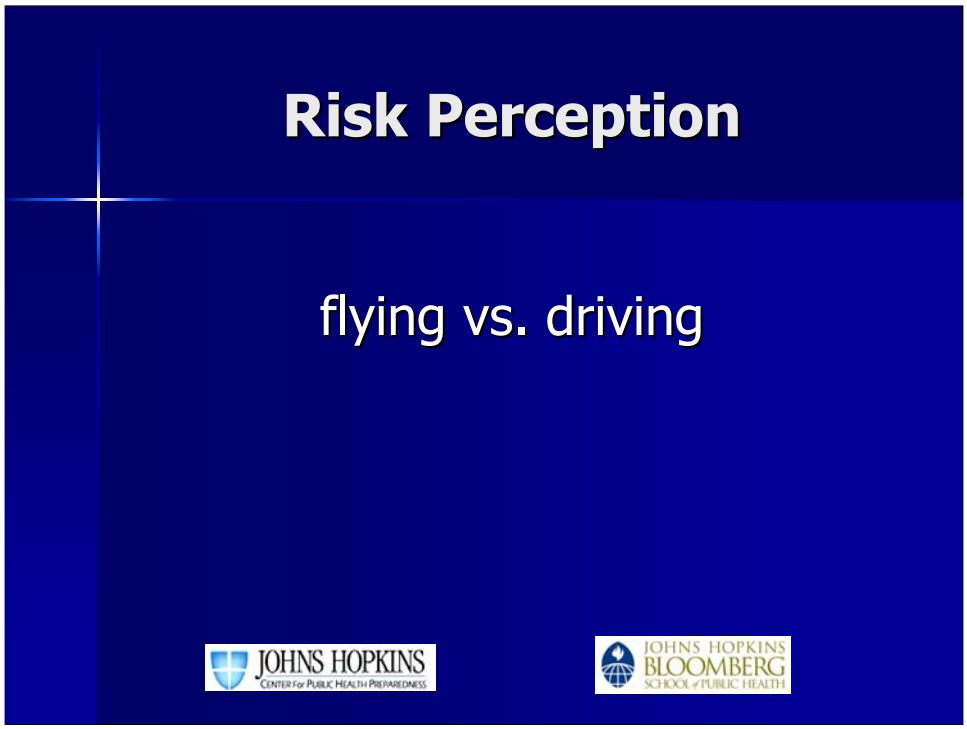
We (or someone we know) have control of the vehicle, but we have no idea what that pilot drank for lunch.

Driving is voluntary. Often the circumstances that make us decide to fly make it impractical if not impossible to drive.

Accidents when driving are less catastrophic. Usually if people die in motor vehicle accidents, they die by ones or twos. When an airplane crashes, usually everyone on board dies, 200 people all die at once, its all over the news—it's a catastrophe.



Why do we care? Because if we understand what kinds of factors people use to form their perceptions of a particular risk—like of a crisis situation, for example—we can use this understanding to influence the public's risk perception and bring their *perception* of the risk closer to the *actual* risk.



How do we do that? Let's go back to our example of flying vs. driving.

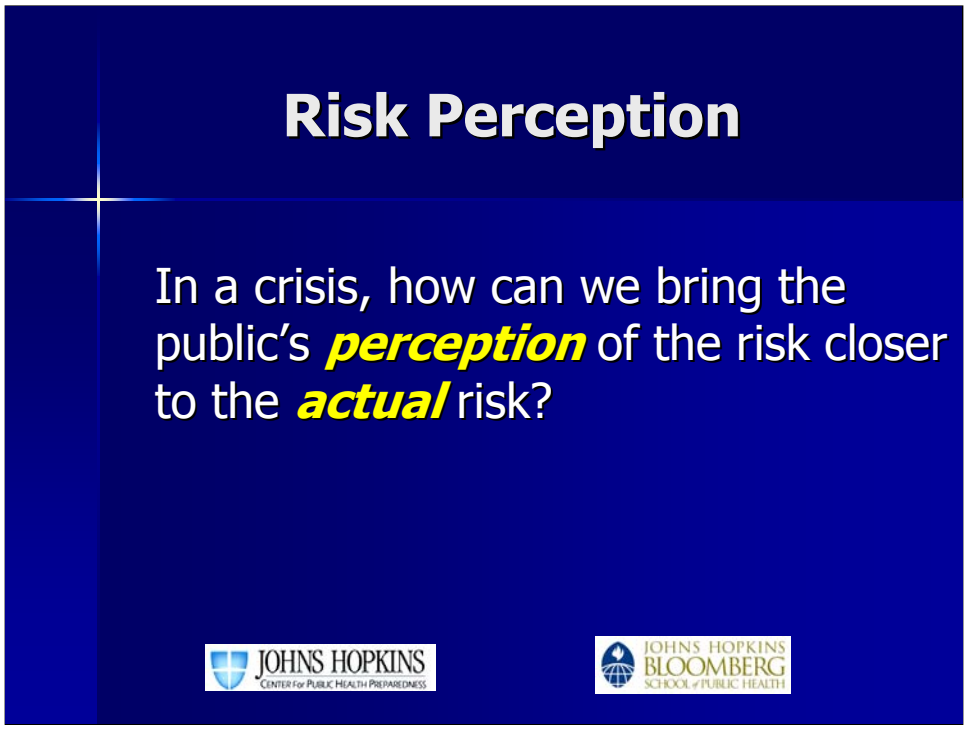
I usually ask the audience to take a little mental trip with me.

We've decided that we need to fly somewhere. We pack our bags and head for the airport. When you step up to the ticket counter, the ticket agent is surly, not friendly and not helpful, but you eventually get checked in. As you go through security, the same thing happens. The TSA agents are rude, not friendly, not helpful. As you're boarding the plane, you look into the cockpit and see the pilot "popping a cold one" and whooping it up with the flight attendants. For whatever reason, you don't get off the airplane at that point and as you're trying to find you seat you ask the flight attendant for assistance. He's not helpful, doesn't seem to know where to find what you need. You get your luggage stowed and take your seat. You might be feeling pretty nervous now, kind of drumming your fingers on the armrest, and the person sitting next to you says "Don't worry. Flying is so safe, you only have a 1 in a million chance of dying on this airplane today." Does that make you feel better?

The audience will likely respond "NO!" Emphasize again that statistics are not the most important thing that people, even well-educated people, use to decide how risky something is.

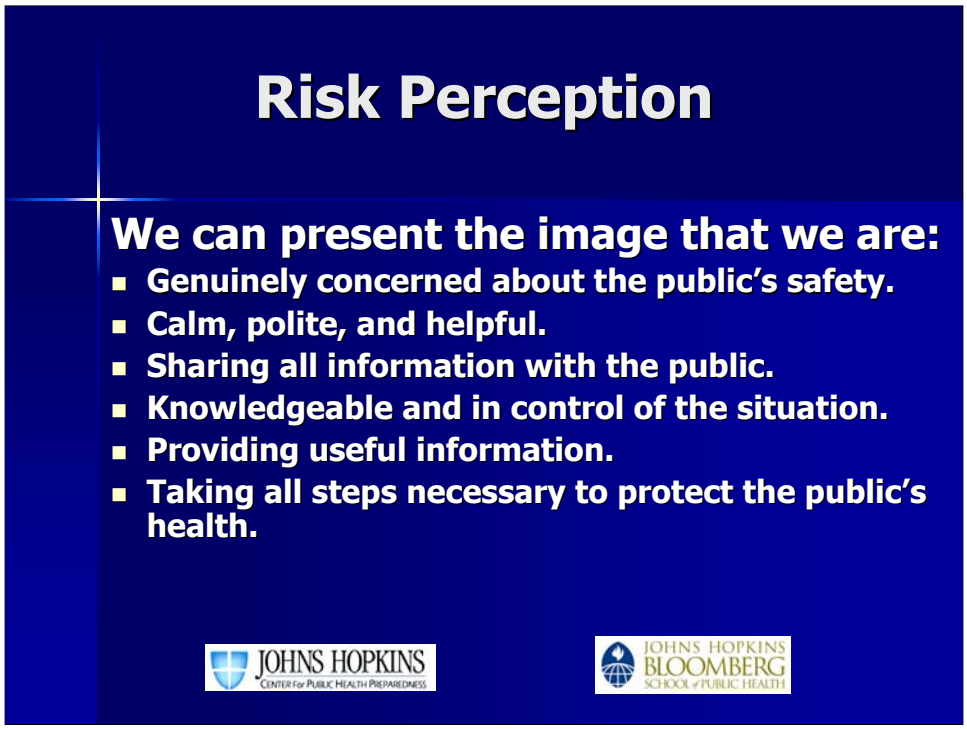
Now consider what kinds of things might actually reduce your perception of the risk of flying and make you feel more at ease. If you start back at the beginning, as you approach the ticket agent to get checked in, the agent smiles at you, is pleasant and helpful. As you go through security, the TSA agents are polite, friendly, helpful. As you're boarding the plane, you look into the cockpit and see the pilot and copilot very seriously and knowledgably going through their pre-flight checklist of equipment. They look like they're taking the responsibility of their jobs very seriously. As you make your way to your seat, the flight attendant is helpful and friendly. As the plane is getting ready to take off, the flight attendant goes through the whole safety routine. How does all that make you feel? (Audience usually shakes their head in agreement and mutters something like "Better".

Ask the audience "Which of all those jobs really has direct responsibility for flying that plane safely?" (the pilot) Emphasize that *all* of the people helped *influence* your *perception* of the risk of flying.



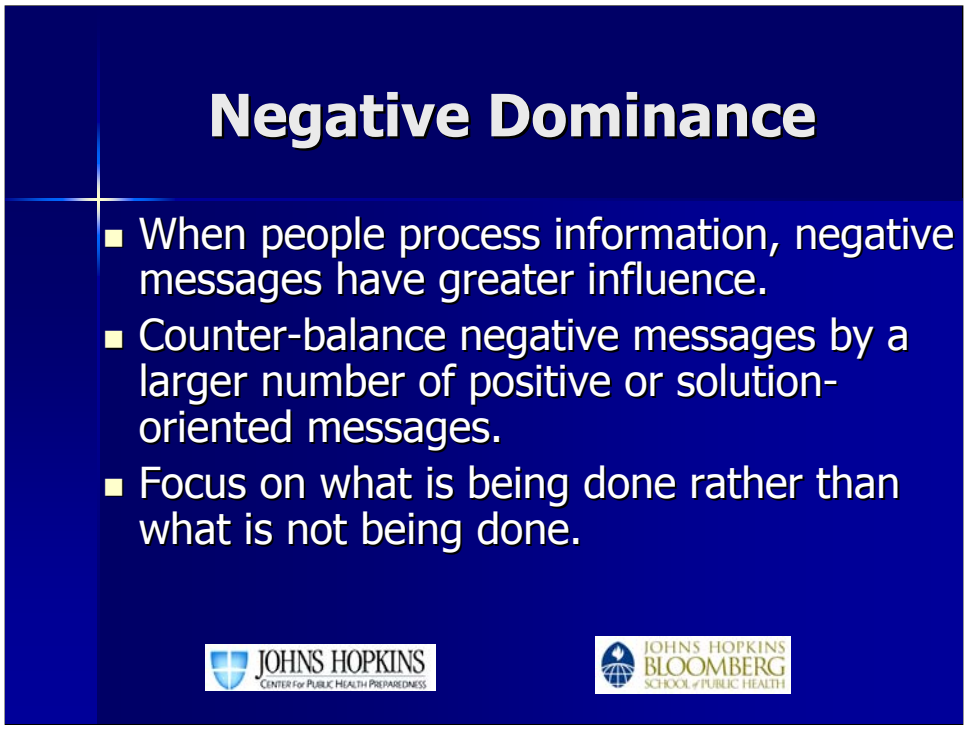
This example shows that it is possible to influence and even improve people's perception of risk. Your agency can use this information.

Ask the audience for suggestions of how we can use what we've learned about perception and apply that to the health department in a crisis.



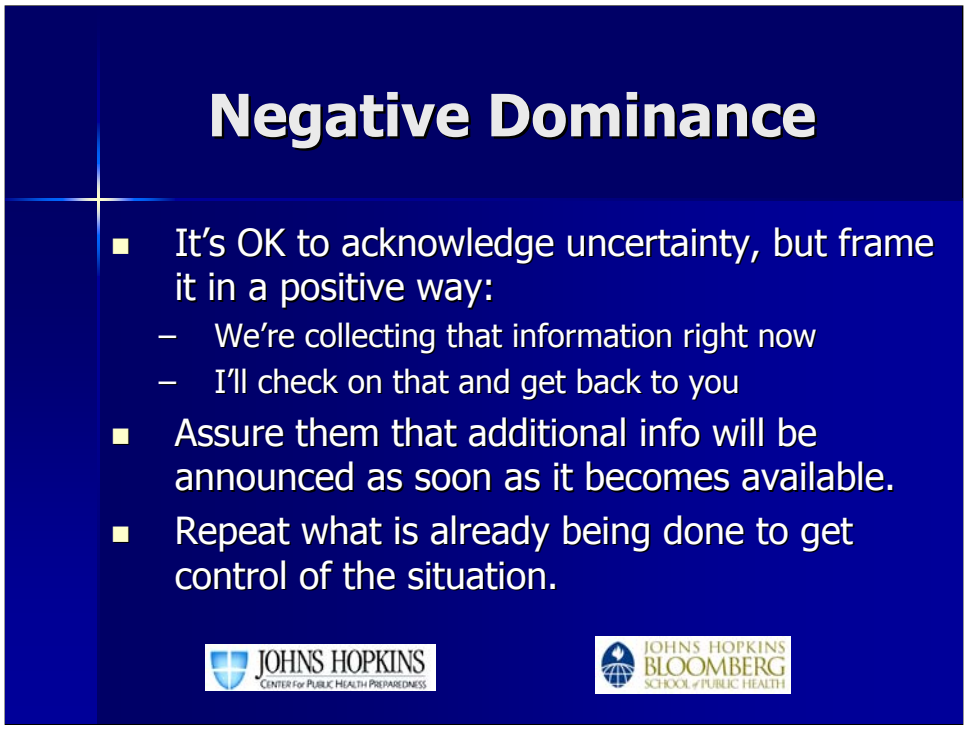
By appearing to be concerned for the public's safety, knowledgeable, taking action to get control of the situation, sharing information, the agency can reduce the fear factor and bring the public *perception* of risk closer to the *actual* risk.

This is just a transition slide.



When people process information, negative messages have greater influence. So avoid giving negative messages if at all possible. One way to do that is to focus on what *is* being done rather than what *is not* being done.

But if you must give a negative message, it takes 2 or 3 positive messages to counter-balance one negative message.



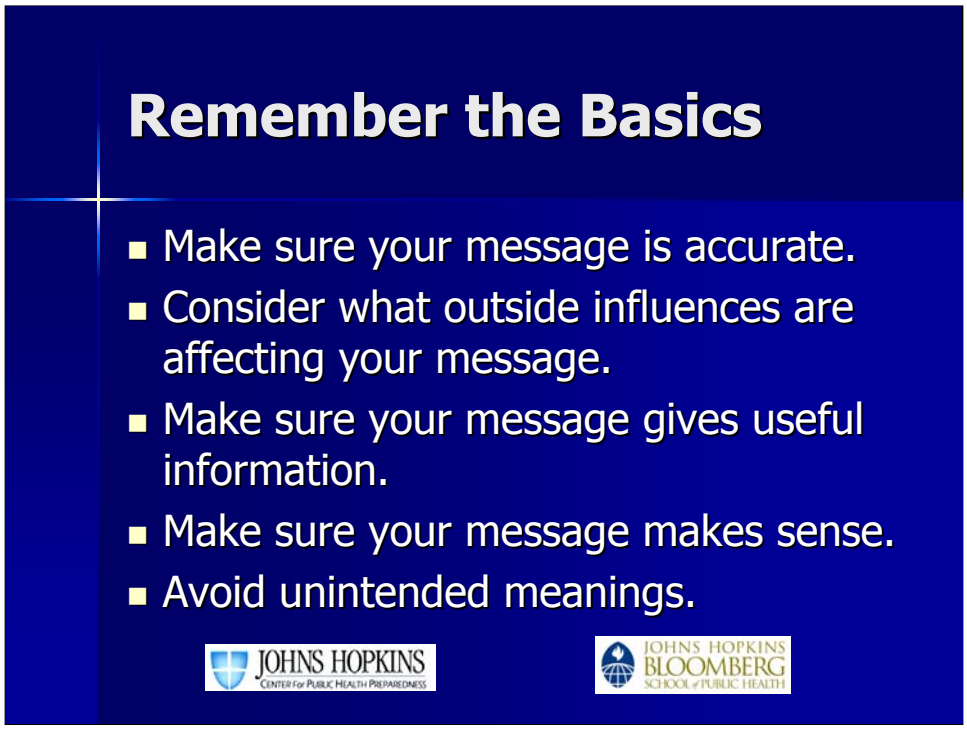
One way to turn a potentially negative message into a positive message is to frame uncertainty in a positive way.

There will always be questions that you can't answer. It's OK to acknowledge uncertainty, but there are ways to do so that are preferable and don't compromise the public's trust. This is another method for turning a potentially negative message—"I don't know" into a positive message "We don't yet have that information, but this is what we are doing to get that information and as soon as we have the information, this is how we will get that information to you." It's OK to express regret at not knowing the answer. For example, "I can understand that it must be frustrating to not know …., in fact its frustrating for us to not know that either. That's why we're doing everything in our power to get that information and as soon as we know, we'll let the public know."

Avoid the appearance that you know the answer but are refusing the share the information with the public.

We talked earlier about how the public tends to NOT panic in a crisis, but there are some things that can cause the public to panic and one of those things is if they think we're holding back on them. If they think we have more information and we're not sharing it. That really frightens people. If they think we're not telling them the whole story, then their imaginations can run wild. "Maybe they're not telling us because the truth is just too terrible. Maybe the government has made a huge mistake and they're trying to cover it up.

In addition to these risk communication theories, it's also important to remember some basic common sense.



If you can find funny photos to illustrate each of these basic principles, it really helps to lighten up the audience and wake everyone up. Look on the internet. You can often find pictures of signs that illustrate these points and add some levity.

Accurate- signs that have been painted with misspelled words (“SOTP”, or “Keep Right” that has the arrow pointing left).

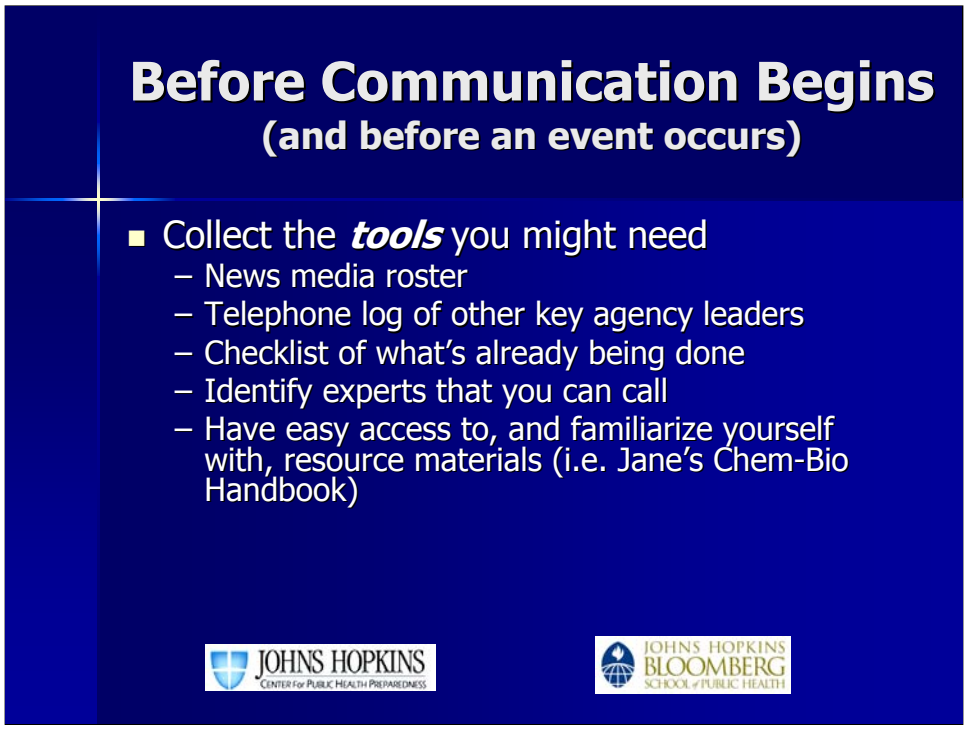
Outside influences – signs with bushes or plants that have overgrown the sign covering up key words and turning the message into something funny.

Useful information- pictures of signs that DON’T provide useful information (we’re not open right now because we’re closed, caution-water on road during rain)

Makes sense-watch for business advertisements that don’t necessarily make sense (“Phone out of service? Give us a call!)

Unintended meanings-there’s a variety of these floating around the internet.

Specific photos illustrating these weren’t included because they’re often copyrighted so shouldn’t be put into enduring materials that will get passed around to different people, but you can probably find some to use in your own presentations. You might even find some real-life examples with signs around your area.



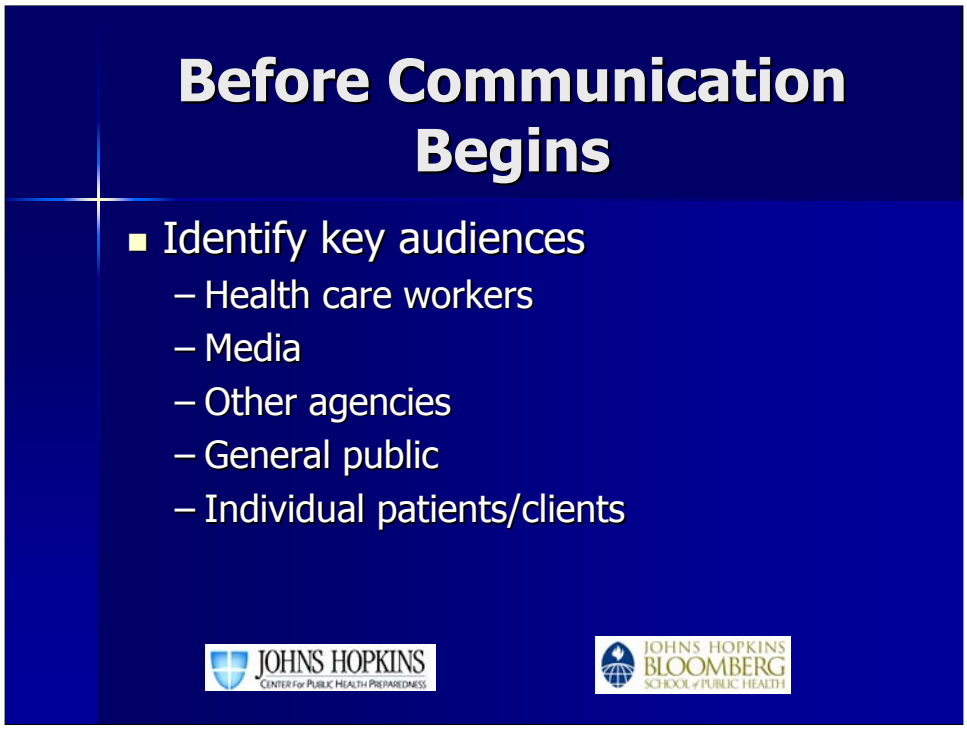
Media: If you may be talking to the media, start compiling a list now of the various stations and contact people. Establish a relationship with a reporter from the newspaper and TV stations now and assure them that you'll provide useful information in the event of a crisis. That way you'll know that in the event of an emergency, the media will be more apt to come to you for accurate info instead of trying to dig up less useful and perhaps less accurate information. Understand that media people work on deadlines. If a media person calls you for information that you don't have readily available. Ask when their deadline is and negotiate for a reasonable time for them to call back and interview you after you've had some time to get accurate information.

Key agency leaders: Cultivate relationships with key leaders from other emergency response agencies such as fire, ambulance, and police now. Have a list of names and numbers handy. Consider meeting with these people now for lunch and get more familiar with what their role in a crisis might be. Let them know what your role in a crisis might be and talk about ways you can all work together for the public good. It will be much easier to work with someone in a disaster situation if you've already established an amicable working relationship and you're not strangers.

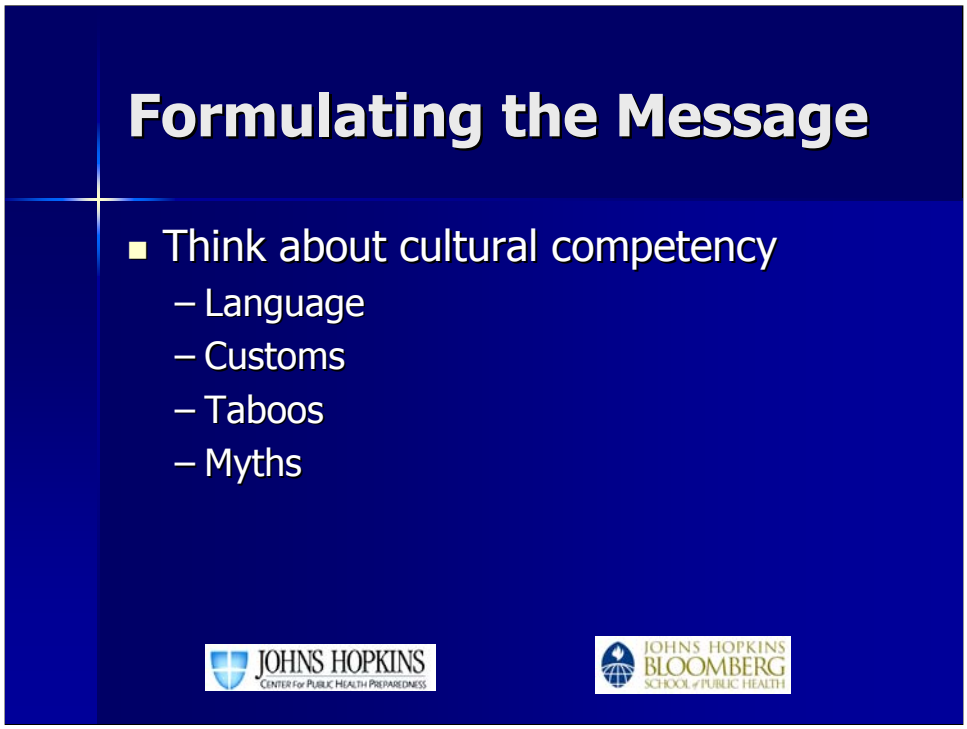
During a crisis event, make a list of what your agency is already doing to get control of the situation, get more information, disseminate information to the public and protect the public. Have this list handy to mention to your audiences so that they know your agency is on top of the situation and taking their health and safety concerns seriously.

Identify experts now that you can call in an emergency who know about the likely terrorism agents: nuclear, chemical and biological. Know how to get a hold of them on short notice.

Know where to get additional information you might need during a terrorism crisis. No one can remember all the details about every chemical or biological agent that might be used in an attack, but you can know where to get that information in a hurry. Jane's Chem-Bio Handbook, for example, is a good overall reference.



Think about whom you'll likely be communicating with. Consider the unique aspects of each of the various "audiences" you'll need to communicate with in the event of a crisis.



"Cultural Competency" has become a common buzzword lately in public health. In this context, it means consider all the unique aspects of the various cultures of people you might need to communicate with in a crisis. The more you know about these cultures in advance, the better prepared you will be to effectively communicate.

Some examples to get you started thinking: This is not meant to be an exhaustive list.

Language: If your audience doesn't speak the same language you do, communication is unlikely to be very effective. If you'll need an interpreter, try to find someone NOW before you're in the midst of a crisis.

Customs: Think about what customs you might encounter that could hinder the effectiveness of your communication, or that you need to be sensitive to.

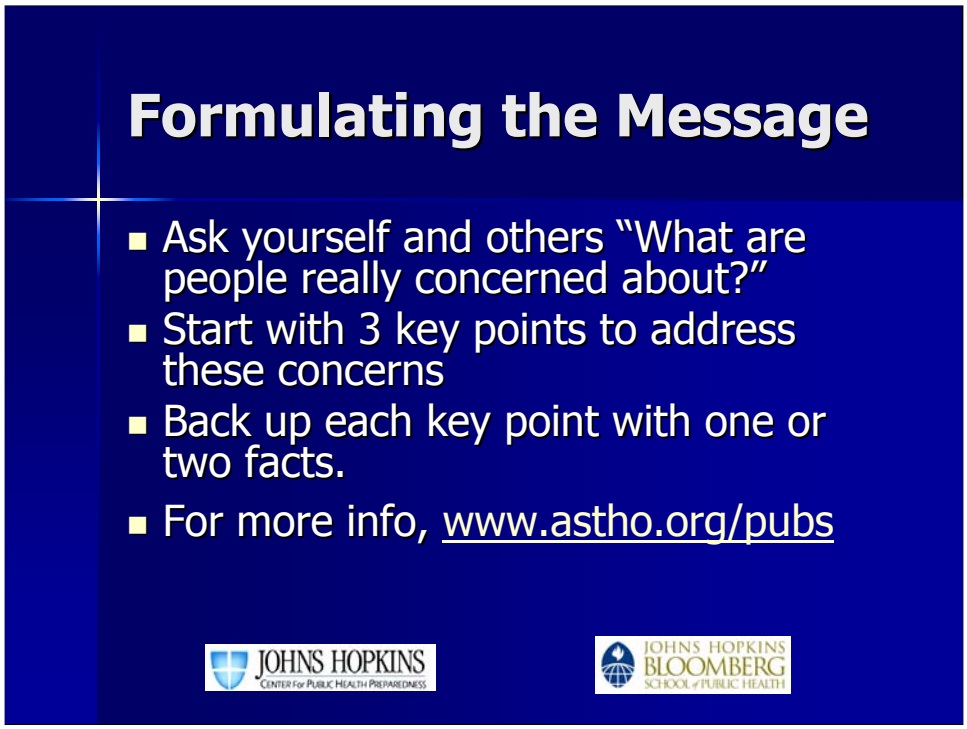
Examples: If you're female, how does your audience view the status of women? Will your message be taken seriously and the information you have to give valued by your audience? You may need to find an appropriate messenger (male?, elder?, well-respected community individual?). Now is a good time to locate and develop a relationship with an appropriate messenger. You'll want to be able to trust your messenger to provide an accurate, culturally sensitive, message during a crisis.

Are there religious beliefs that might need to be addressed? Such as an unwillingness to be vaccinated or accept blood products? Perhaps this knowledge will allow you to obtain information ahead of time that might put your audience at ease. For example, can you obtain proof that the vaccine does not contain an ingredient your audience finds offensive?

Ask audience for examples of cultures they might encounter in their area. Usually a variety of ethnicities will be offered. These are good examples, but also mention different kind of cultural differences such as religion, age, gender, occupation, etc.

Taboos: For example: In some Native American cultures, it is taboo to speak of "death" or "dying" or to make any allusion to the possibility that someone might die. To do so is to deliberately invite death on that person. If you don't know this ahead of time and haven't already thought through a strategy of how to do deal with this challenge, how would your message about "Your chance of death would be reduced if you get the smallpox vaccine" go over in the case of a smallpox attack? This is just an example. The more you can find out about any culture you'll be coming in contact with BEFORE the crisis will better prepare you to communicate more effectively with members of that culture during a crisis.

Myths: We are all members of families, neighborhoods, and communities, and as such we can be very valuable to our employers. For example, if a health professional hears a neighbor proclaim "I'm not going to get the smallpox vaccine because I heard you can get AIDS from getting that vaccine." If its just one misinformed person, the health professional can set them straight. If the health professional starts to hear the same thing from several people, the health professional can take steps to "nip this growing urban myth in the bud." Let your health officer and/or public information officer know what you're hearing from the community so that they can address the concerns publicly.



What are the goals of the communication? A public that is overly placated and unconcerned about their safety is not the goal. During a crisis, you want the public to be vigilant, informed, concerned, and calmly able to make reasonable decisions about how to protect their health and safety.

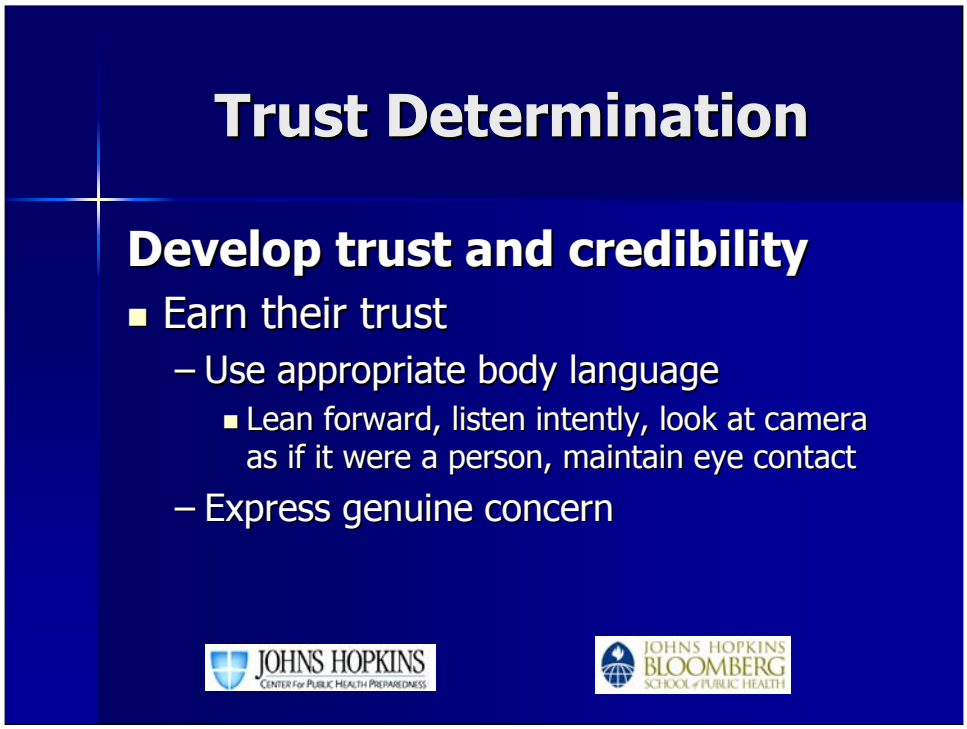
Don't simply assume that the general public has the exact same concerns you do. You may be way off base. Ask your coworkers, family members, friends, other non-medical people what they are really concerned about. Address those concerns with 2 or 3 key points and have one or two facts to back up each key point.

For more information and examples, refer to ASTHO's manual "**COMMUNICATION IN RISK SITUATIONS:**RESPONDING TO THE COMMUNICATION CHALLENGES POSED BY BIOTERRORISM AND EMERGING INFECTIOUS DISEASES"

It's downloadable for free from their website.

Before Communication Begins

- Remember the Risk Communication Theories
  - Risk perception
  - Negative dominance
  - Trust determination
  - Mental noise
- Remember the basics



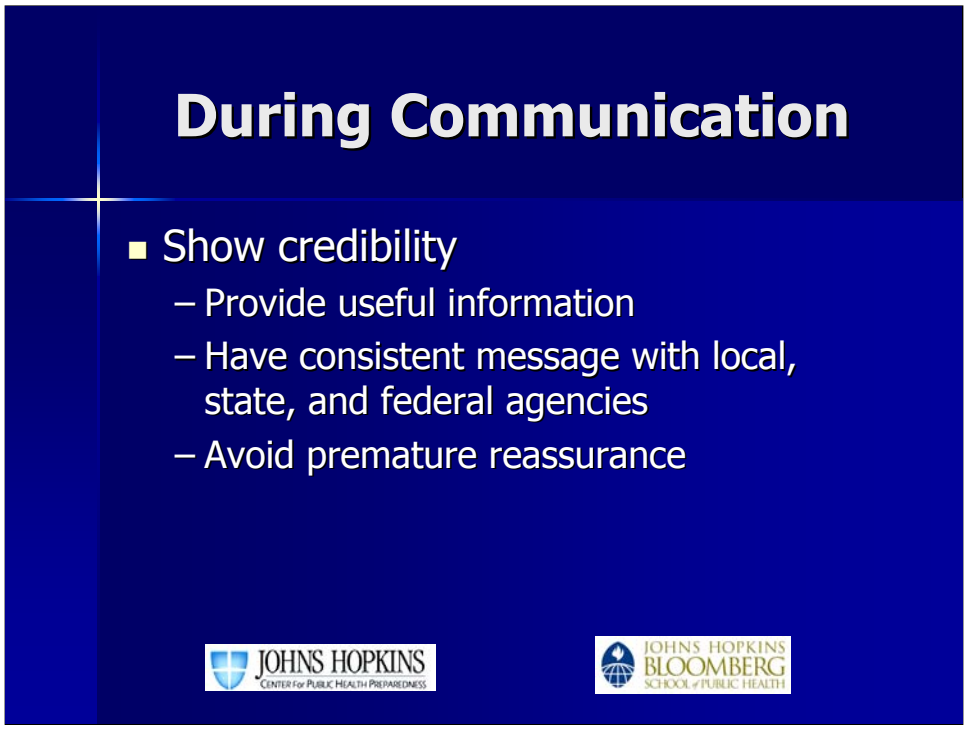
Ask the audience “Have anyone ever talked to someone you didn’t trust?” Audience responds “yes”. What happens if you’re talking to someone you’ve already decided you don’t trust and now that person gives you some information. How do you feel about the information?” Audience responds “Don’t trust the information.”

So what does that mean for us as communicators for the health department? It means that we could have the best information on the planet, but if the public doesn’t trust us, our information has no value.

Hopefully, the health department has done a good job of developing trust on an everyday basis with the public. But even so, every time you talk with an individual member of the public, you have to develop trust and credibility with that person. Even if they trust the health department, if you are delivering information, they also have to trust YOU.

Your communication will not be effective if people don’t trust what you’re saying or believe that you are a credible source. Appropriate body language is very important. Avoid crossing your arms in front of your chest, leaning back in your chair, moving around too much. Instead, use good listening skills and body language. Lean forward, maintain eye contact (good in most cultures, but not all!), use good listening skills. Express genuine concern for the audience’s well-being and safety.

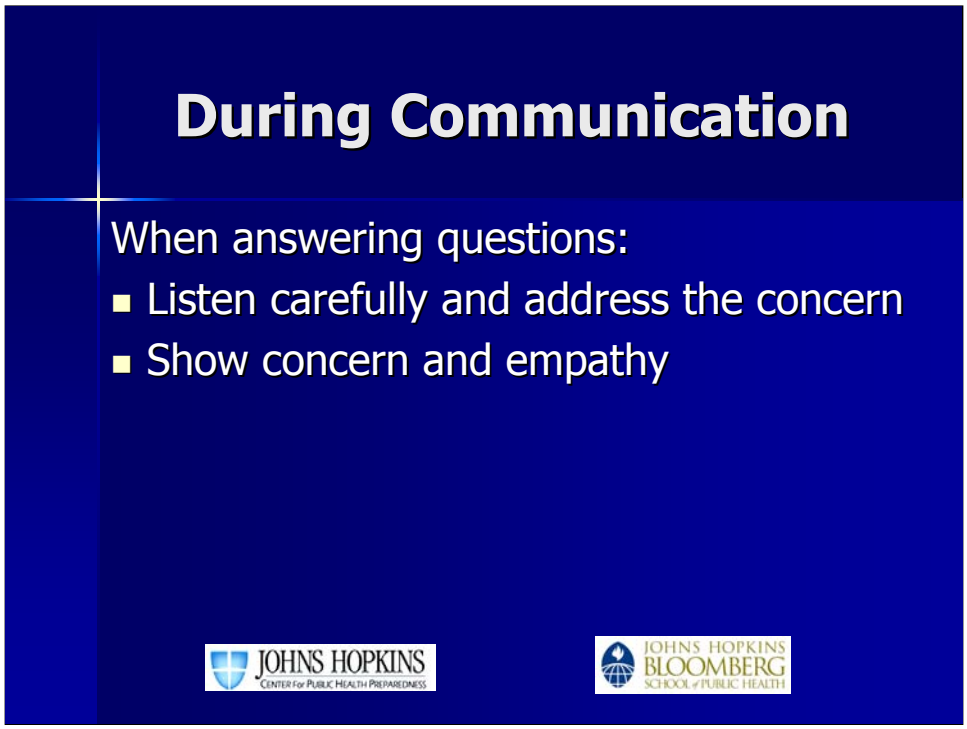
One way to establish empathy and connect with an audience fairly quickly is put yourself in the same boat. Remind the audience that you (and your employees, your family, your children) are members of this community also and are facing the same threat.



The best way to establish credibility is to provide useful information. Useful information is specific, truthful, provides information that can be used by people to make decisions about their health and their safety. Don't be too vague and don't give the impression that you know more than you're sharing. An examination of the public's behavior during past emergencies and disasters reveals that the public is NOT likely to panic. But one condition that is more apt to cause panic is if the public feels that those in authority are hiding something from them.

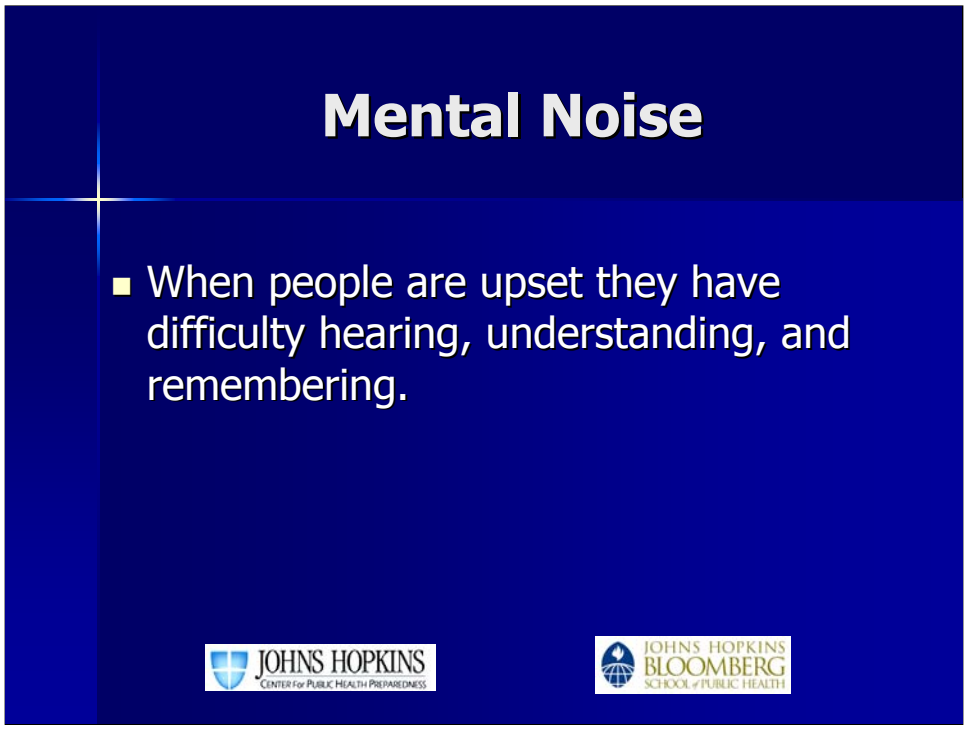
Try to provide a consistent message throughout your own agency and the other emergency response agencies, both local and federal. If the public hears different things from different people or agencies, it gives the impression that no one really knows what's going on. That is more frightening and unsettling.

Avoid premature reassurance. In the event of a crisis, there is a very real threat of danger. If you tell people they have nothing to worry about and then something bad happens, you have lost their trust and you are no longer a credible source. It will take a long time to gain their trust again, if ever.



Answer the question that was really asked—not what you think they ought to be asking. Address the concerns that your audience express.

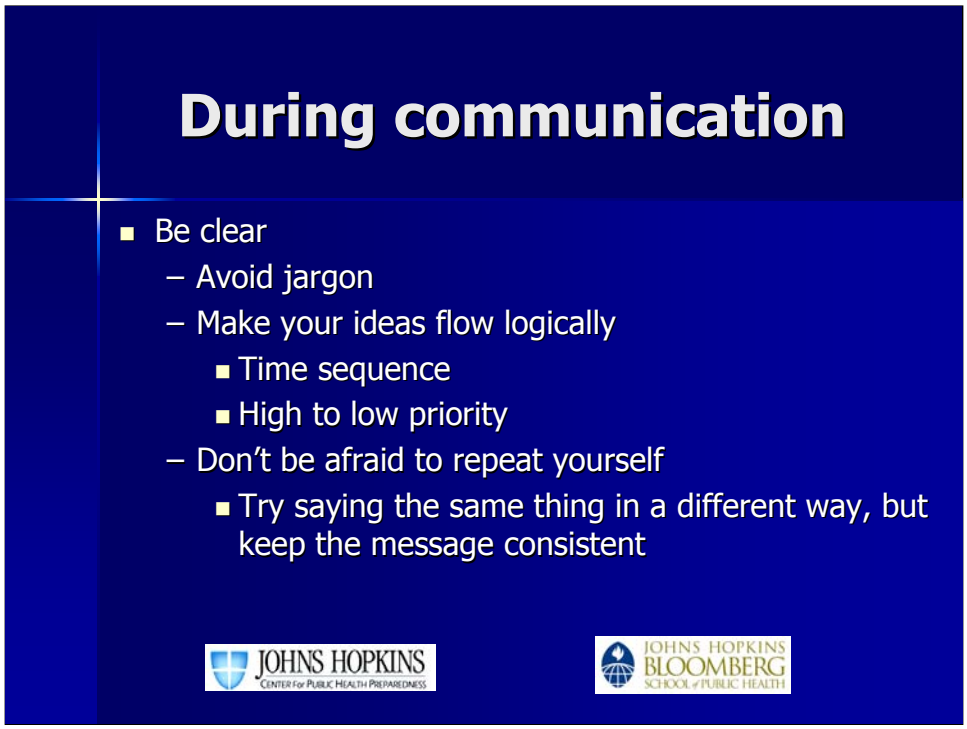
Another transition slide.



Ask the audience: “So what does this mean for us as communicators in a crisis or disaster situation?”

Get some suggestions from the audience such as

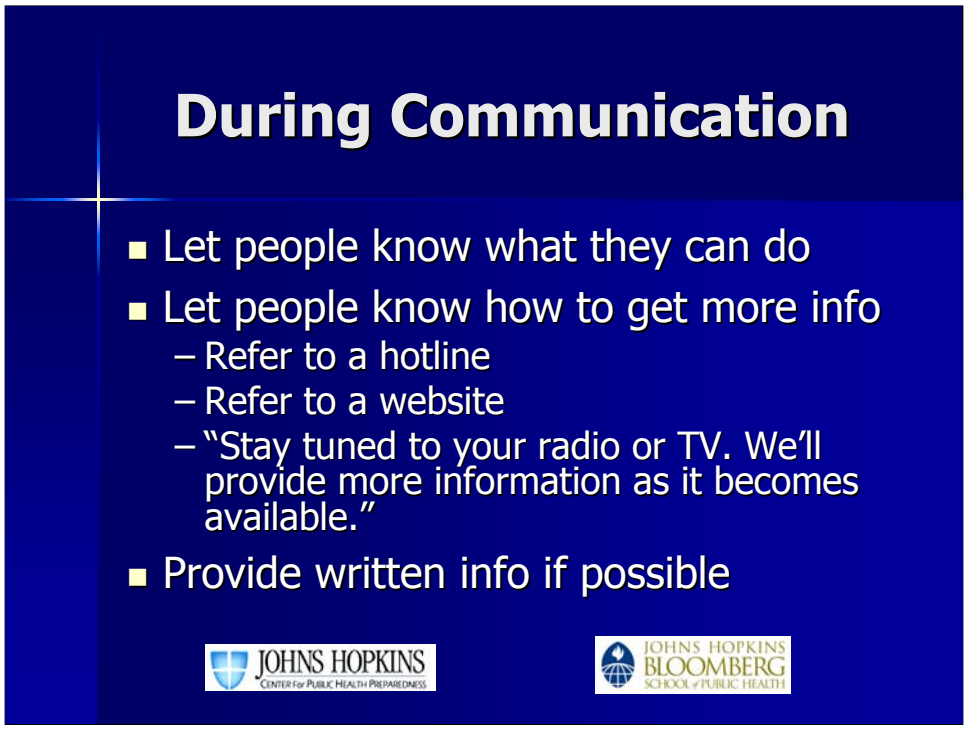
Be patient. Remain calm. Repeat yourself. Provide written materials if possible or some way for people to get additional information after they’re done talking to you and can’t remember what you said. Keep the message simple.



Be as clear and concise as possible. Beating around the bush doesn't make bad news any easier to take and often just confuses people. Avoid technical language and slang expressions. Have someone not in the medical field read through your statement or listen to your message and let you know if its easy to understand.

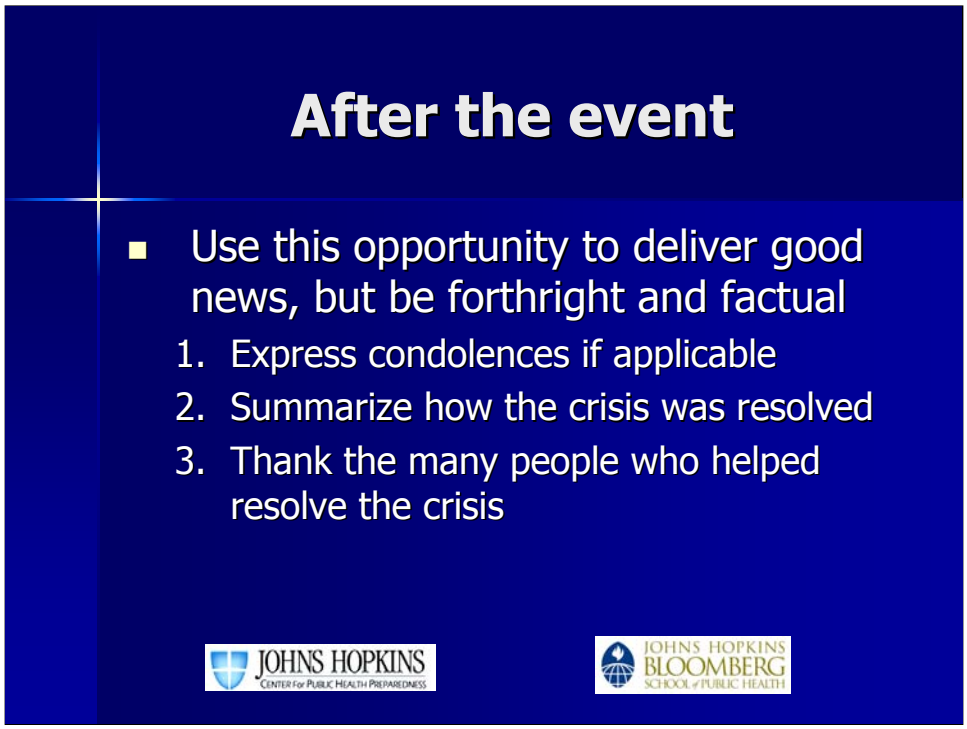
Use some kind of logical sense of order such as time sequence or priorities.

Mental noise-people who are frightened often don't hear as well, understand as well, or remember as well as usual. It's OK to repeat yourself. Be patient. Try saying the same thing in several different ways, but keep the message consistent.



Ask the audience: "Why is it so important to let people know what they can do?"

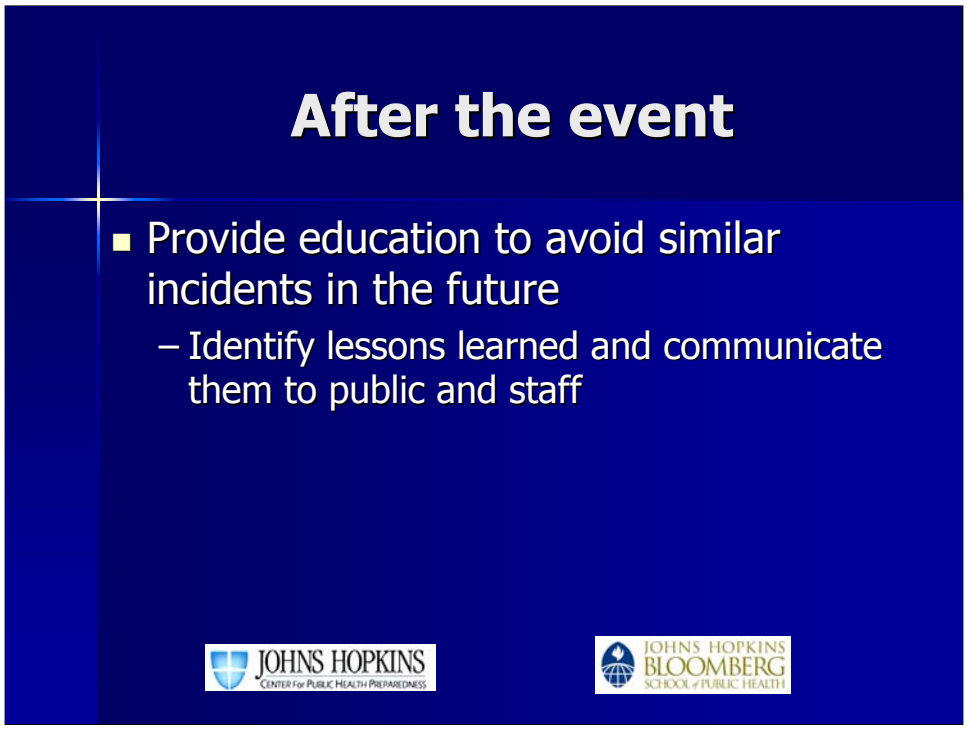
Because you can give them some *control* back. A disaster is by definition an out-of-control situation. If we can give people a little bit of control back by letting them know what they can do to protect themselves and their loved ones—even if its only where to go or how to get more information as it becomes available—they feel better. You've empowered them to do something.



First of all, express condolences for loss of life, injuries, property loss, even just that people had to go through such a hard time.

Second, summarize how the crisis was resolved. Tell the public about your agency's role in resolving the crisis.

Third, thank everyone that helped.



Analyze the response to the crisis and provide education to avoid similar incidents or respond better in the future. Discuss lessons learned with supervisors and those whom you supervise. Discuss what went right and what could be improved next time. It might be appropriate to share some of these lessons with the public. The time immediately after a crisis situation is resolved can be useful, “teachable moment” . People may be more willing to listen while the memories are still fresh and more willing to change personal behavior, perhaps to prevent or mitigate a future crisis.

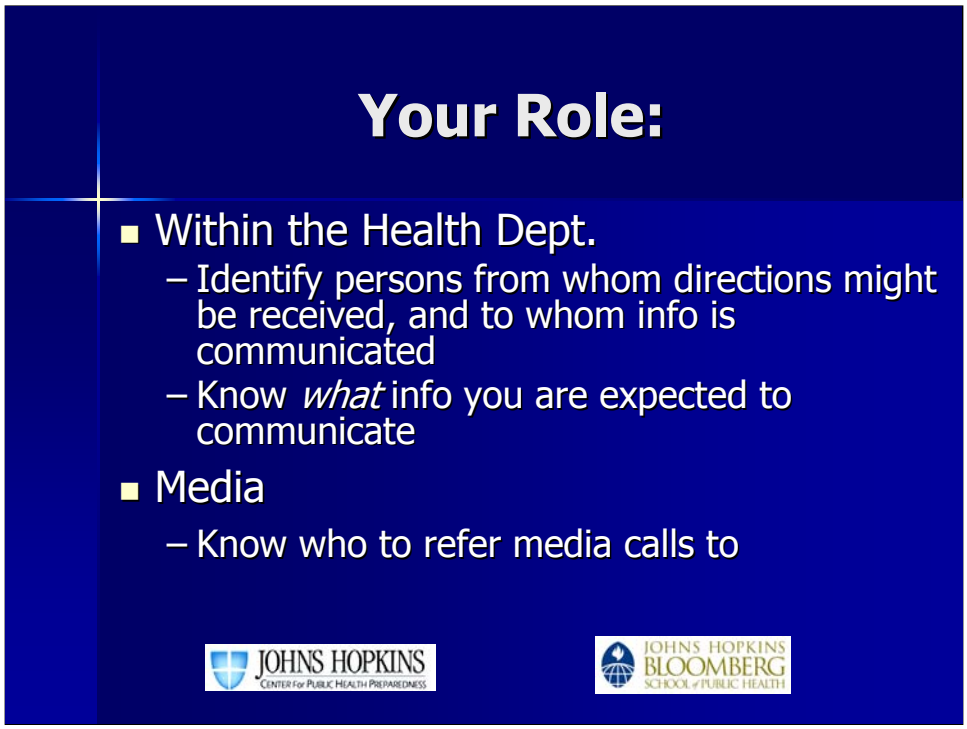
Have official debriefing sessions and encourage a sense of openness and honesty so people can feel comfortable discussing how they were affected by the event and how they’re feeling now.

Ask the audience to vote (thumbs up or thumbs down) on how they think the "official" (i.e. what they heard from agency officials and representatives on the radio and TV) risk communication was for each of these events. Usually most people vote "thumbs down" for anthrax and "thumbs up" for Chief Moose during the sniper attacks. Emphasize that not everyone votes the same way because we are all individuals and OUR perceptions are also shaped by our experiences, etc. For those who think Chief Moose did a good job of communicating, ask them what specifically he did that worked well for them. How did he show empathy? How often did they hear from him (often). How many different spokespeople were there? (Just Chief Moose). Was the message consistent? (Very).

Usually the audience votes mostly thumbs down for small pox vaccinations (message was too inconsistent).

Usually they vote mostly thumbs up for Julie Gerberding from CDC during the SARS event.

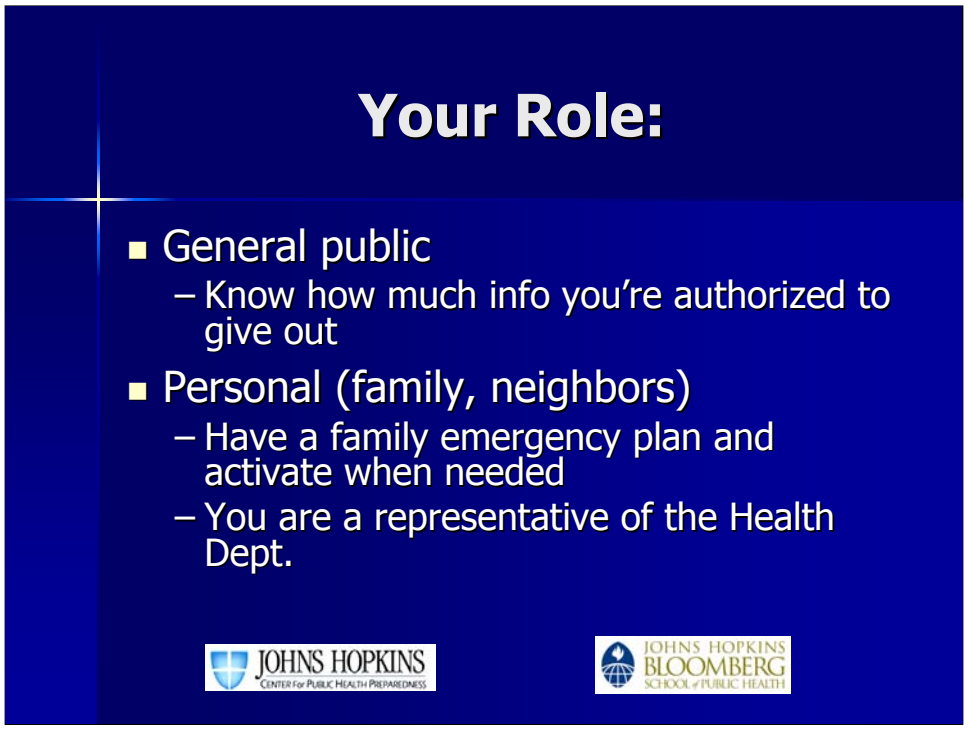
Emphasize that they actually *do* recognize good risk communication when they see it, even if they didn't think of it in precisely those terms before. Suggest that they notice when "officials" communicate about risk and they pay special attention to what "works" for them and emulate those techniques. And that they also notice what doesn't "work" for them and that they avoid those techniques. Learn from other people's mistakes.



It's important for everyone to know where they fit into the chain of command with respect to communication. Know who you're supposed to get your instructions and information *from* and who you're supposed to provide instructions and information *to*. Know what information you are expected to communicate and to whom.

Emphasize that we are not in the business of withholding information, but we definitely don't want to be putting out false information. So the health department may have some hunches about what's going on, but we don't want to release that information until its been vetted and found to be as accurate as possible.

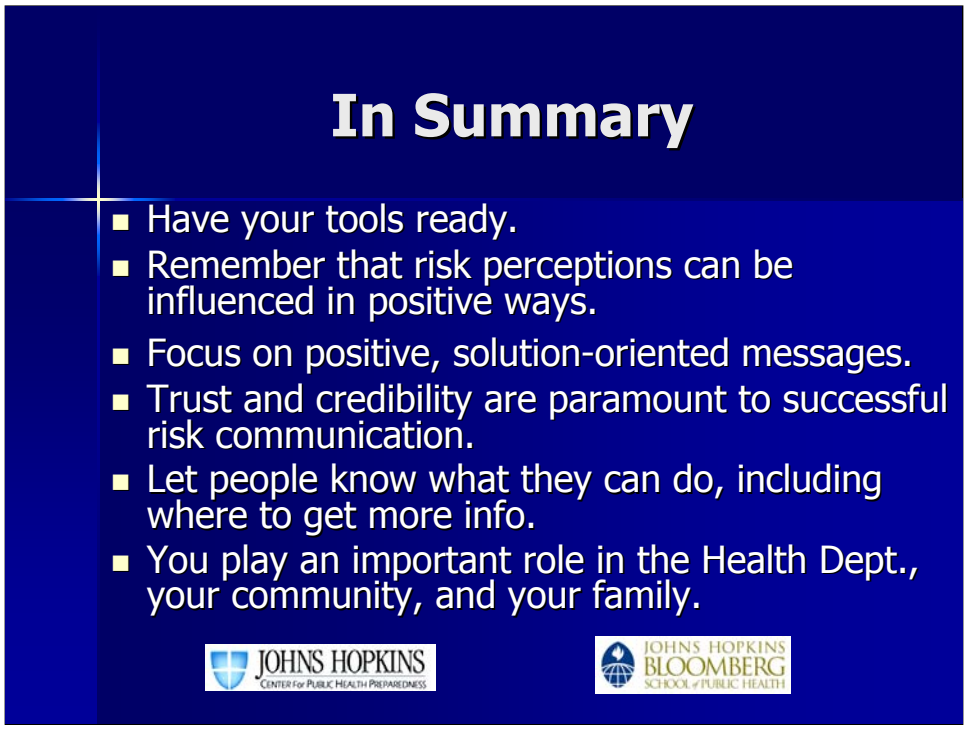
If you're not authorized to talk to the media, that doesn't necessarily stop the media from trying to talk to YOU. You can help the media to get accurate information out to the public by referring them to the specific person that they should talk to at your agency. Give them a name and a phone number.



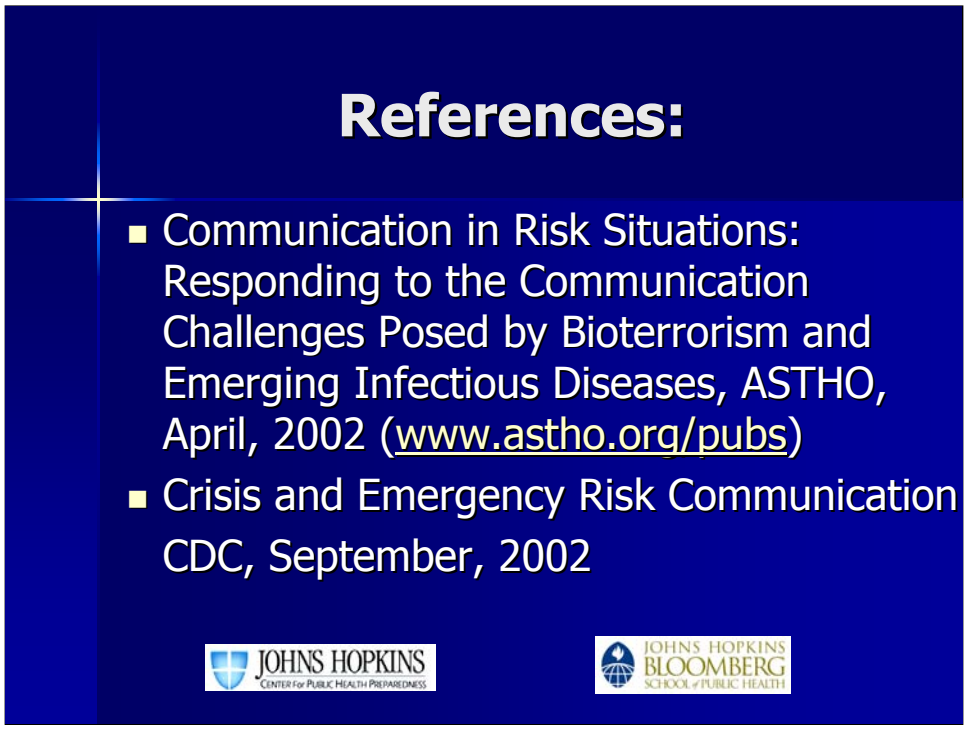
Emphasize that we are not in the business of withholding information, but we definitely don't want to be putting out false information. So the health department may have some hunches about what's going on, but we don't want to release that information until its been vetted and found to be as accurate as possible.

Emphasize that it's normal for people to be concerned about the safety and well being of their families first. So a family emergency plan provides Health Dept. employees with the peace of mind that their families are being well cared for so that the employee can do their job. Remind the audience that their families are safer during a crisis if there is a good strong response from the health department and that everyone will be needed during such a response.

Also remind people that no matter where they are or what time it is, they are ALWAYS representative of the health department and as such, what they say carries more weight. Don't be responsible for starting an urban myth by sharing your own opinion about something and not clearly "marking" it as your opinion.



In summary, some of the things we can do to improve our communication about risk, especially during a time of crisis or disaster is to…(read the slide)



The first reference is downloadable for free from the astho website. It is concise and full of useful, how-to information.

The second reference is available from CDC, also for free, but is about 225 pages and useful if you have a particular interest in the *theory* of risk communication.

Questions ?????

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Risk Communication
Short Version
PowerPoint Presentation Guidelines

To create the short version of this PowerPoint Presentation delete the following slides from the previous presentation:

Slide 5 – This is not a new idea
Slide 10 – Risk Perception – Risk Perception =
Slide 14 – Risk Perception – Risk More Acceptable
Slide 20 – Before Communication Begins – Remember the Risk Communication Theories
Slide 24 – Remember the Basics
Slide 29 – Before Communication Begins – Remember the Risk Communication Theories
Slide 33 – During Communication
Slide 34 – Before Communication Begins – Remember the Risk Communication Theories
Slide 35 – Mental Noise
Slide 38 – After the event
Slide 39 – After the event

8. Personal and Family Preparedness

Personal Preparedness Planning

What should I use for a safe room for a non-wind, non-radiological emergency if I live in a first floor apartment?

You need to find the room that best fits the definition of a safe room. If you don't have an upstairs, at least find a room that is as interior as possible with as few windows and doors.

I have no family members in the area. Who can serve as my local point of contact in my communications plan?

This varies from one person to the next. You may want to identify a trusted neighbor or member of your church, synagogue, mosque, etc. who might be able to serve in this capacity.

Personal Readiness Planning for Public Health Workers

Daniel J. Barnett, M.D., M.P.H.

Johns Hopkins Center for Public Health Preparedness

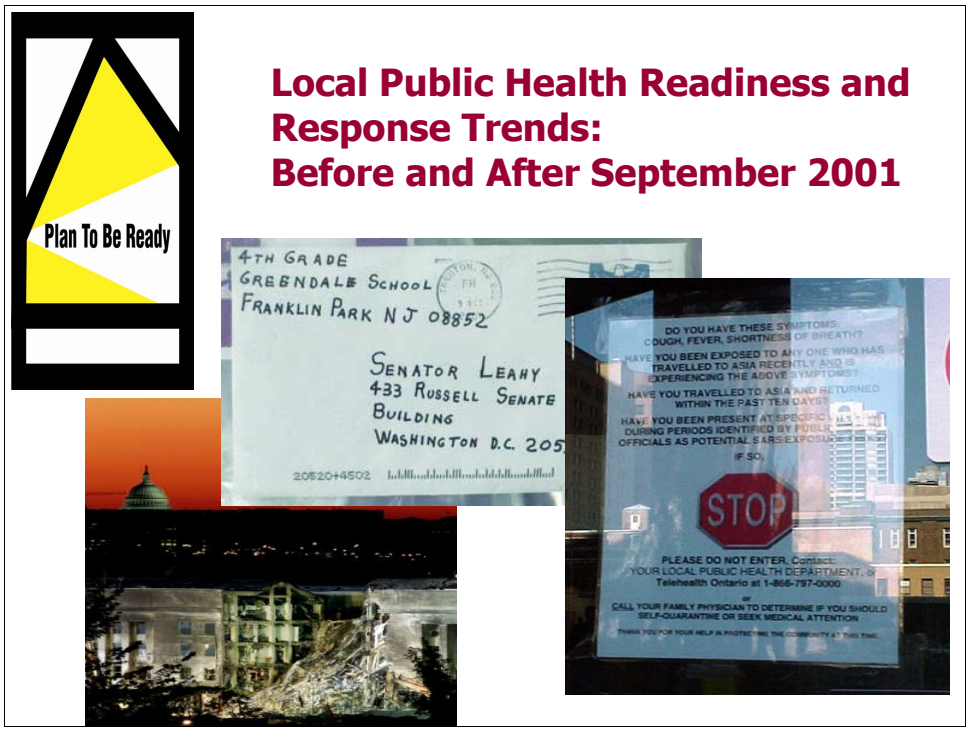
Personal preparedness is very much the cornerstone of public health workforce readiness planning. Among the most frequently cited reasons health department workers give for not being able to report to work in a public health emergency are family concerns and obligations. These reasons are totally understandable, but we will talk about ways to do advance planning to increase your ability to report confidently and comfortably to work in an emergency, knowing that your family is as safe as possible.

Learning Objectives

1. Describe the three components of personal preparedness planning.

2. Recognize and be able to answer 6 frequently asked questions for personal preparedness planning.

These are the learning objectives for today's lecture.



It is important to understand where public health preparedness has come during the past 4 years. These photos depict key events that have shaped where we are in public health preparedness today. On the left: a photo of the Pentagon on 9/11/01. In the center: one of the anthrax letters to the Senate in the fall of 2001. On the right: a photo of a SARS public health clinic in Toronto from 2003.

What do all these photos have in common? Answer: They reflect an all-hazards model of public health readiness, which is the current model. In this construct, public health departments must be flexible and able to respond to a wide variety of intentional and naturally-occurring disasters that impact the public's health.

This all-hazards model introduces new challenges, roles, and responsibilities for public health. Personal and family preparedness are a prerequisite for you as health department workers to meet these new challenges and obligations to your community.

Local Public Health and Emergencies: Pre-September 2001

- LHDs traditionally had relatively peripheral emergency response role with respect to traditional "first responder agencies"
  - Fire
  - Police
  - EMS
- Minimal or no after-hours response capability
- Unfamiliarity with Incident Command Systems
- Little readiness planning with other LHDs, first responders, and hospitals

This slide depicts where public health "was" in the U.S. before September 2001 in terms of emergency preparedness. Since then, public health has taken a greater collaborative role in partnering and planning with other first responder agencies; public health has since increased its response capacity from a 9 – 5 mode to a 24/7 responsive mode. Incident Command Systems, historically familiar to fire and police departments, is a relatively new concept for most people in the public health sector. The new National Incident Management System offers a more coordinated and universalizable approach to incident command that public health personnel will need to learn.

Basic Principles of Personal Preparedness

- All of us should be able to survive comfortably on our own **for at least 3 days** following an incident
- The time to prepare is **before** an incident occurs
- Preparedness requires open discussion with family members in advance about:
  - Family response planning
  - Your needed role as public health worker in a crisis

Before we go into the three components of personal readiness, let's begin with a few basic rules of thumb. Each of us (including our families) needs to be able to survive comfortably on our own for 3 full days after a disaster. Historical precedent has shown that it often takes that length of time for outside assistance to arrive. A governing principle is that "all disasters are local!"

The next rule is that the time to prepare is before a disaster occurs. The night before landfall of a hurricane, for example – when stores are depleted – is NOT the time to go shopping for needed preparedness items. Think of this as the "April 15th rule" – you want to take care of these items BEFORE the emergency, to avoid long lines and unnecessary anxiety.

Emergency response is a new concept for many of us in public health, and it's also a new concept for our families. Talking in advance with family members about the new era of emergency response expectations for public health workers is essential if we are to truly establish a "culture of readiness" in public health. This advance discussion will also help to reduce the anxiety of your family members if you are called to respond during a public health crisis.

Types of Potential Events

- **Natural disasters**
  - Hurricane Isabel
- **Naturally occurring illnesses**
  - Influenza
  - SARS

As we have mentioned, the all-hazards model of disaster preparedness encompasses a wide range of naturally occurring emergencies, including natural disasters and naturally occurring illnesses.

Types of Potential Events

- **Terrorism events**
  - Chemical
  - Biological
  - Nuclear
  - Radiological
  - Explosive

All-hazards emergency preparedness also includes being able to respond to intentionally-caused disasters in the form of terrorism.

Assembling An Emergency Kit

This is “Step 1” of personal and family preparedness: assembling an emergency kit.

When we talk about preparedness kits, food and water are logical starting points.

Water: the rule of thumb for water is 1 gallon of water per person per day.

This water is multipurpose – drinking, cooking, washing, bathing, etc. Remember: you can get just as sick from cooking with contaminated water as from drinking contaminated water!

Here's an algebra question: if you have a household of 5 people and you need to survive for 3 days, how many gallons of water do you need?

Answer: 15 gallons (5 people X 1 gallon/person/day X 3 days)

If you make your own bottled water using a household filtration system that's fine…just store it in a sealed unbreakable container, mark the storage date, and replace every six months.

If you buy bottled water from a store, use the expiration date on the bottle as your reference.

Food and Water Supplies

- **Food**
  - Non-perishable food
  - 3- to 7-day supply
  - Maintain caloric intake
  - Minimize preparation
  - Manual can opener
  - Maintain sanitation, use fresh water for cooking

This is not the time to bake a casserole to last a week!

The emphasis for food should be on high energy, easily stored, non-perishable food that maintains caloric intake. Protein energy bars are a good example.

If you use canned foods in your storage kit, that's fine…BUT remember, we ALWAYS assume that the power is out in an emergency, so you will need a MANUAL can opener!

Shelter and Clothing

- **Shelter**
  - Use blankets/sleeping bags for warmth
  - Pillow
  - Small candle
  - Waterproof matches
- **Clothing**
  - Change of clothes
  - Comfortable shoes, socks
  - Layers of clothes for comfort
  - Raincoat/poncho
  - Hat

If we are stuck outside in the elements, remember basics like blankets/sleeping bags and a pillow. Waterproof matches are sold at outdoor supply stores and may come in handy in this context.

For clothing, layering is the key, especially in cold/inclement weather. We lose more than 80 percent of our body heat from our head, so a hat is a necessity in cold weather. Ponchos are cheap and easily available at drug stores and supermarkets, and should be included in your kits.

Basic Supplies and Personal Hygiene

- **Basic supplies**
  - Personal medications (at least 3 days supply)
  - Battery-powered flashlight
  - Spare batteries
  - Pan for cooking
  - Communication/ battery-powered radio
  - First aid kit
  - Map
  - Knife/utensils

Of all the supplies in our kits, the most personalized is… medication! Like the other items in your kit, you should always keep a 3 day reserve supply of your essential medications. Insurance companies are much more flexible these days about allowing you to have an overlap reserve supply of medication before your prescription runs out.

Battery powered radios are the most reliable way to receive emergency updates in a disaster, and are a must for any personal/family preparedness kit.

Basic Supplies and Personal Hygiene

- **Personal hygiene**
  - Bathroom tissue
  - Deodorant
  - Feminine hygiene
  - Soap
  - Hand-washing materials
  - Sunscreen

One of the easiest ways that disease is spread after a disaster comes from hand hygiene issues. Hand washing materials refer to alcohol-based hand sanitizers and should be included in a personal preparedness kit.

Other Key Items

- Cash and credit cards
- Personal Identification
- Extra set of car keys
- Extra eyeglasses, contact lenses
- Scissors
- Duct-tape/heavy-duty garbage bags

These are some basic items that are often forgotten in an emergency. Remember, when the power goes out, a credit card is just a piece of plastic!

The duct tape/heavy duty garbage bags refers to sheltering-in-place items. We will talk more about sheltering in place later in the presentation, including the correct ways to use duct tape!

Think back to where you were on 9/11/01. Some of you were likely at work, some may have been in your car, and others may have been at home.

Fact: we are often not at home when a disaster occurs. So, make sure you have a version of a personal preparedness kit not just at home, but at work, and in the trunk of your car!

Step 2 of personal and family readiness involves making a family communication plan.

Key Considerations

- Your family may not be together at home when an incident occurs
- Communication systems may be damaged or overwhelmed following a mass casualty event

These are some basic key considerations relating to communication during a disaster.

Think back again to 9/11/01 and where your family members were when that occurred. We are often not all together at home with our families when disasters occur, so effective and efficient communication with loved ones is critical.

Communication systems may easily become damaged or overwhelmed by mass use during a disaster. For example, the cell phone networks in New York City on 9/11/01 went down due to a combination of extreme use and destruction of the cellular phone network communication antenna located at the World Trade Center.

Personal Calls

- Keeping your number of personal calls to a minimum is important in order to:
  - Reduce burden on the communications system
  - Increase efficiency of communication with family/friends in a crisis
  - Allow you to function more effectively in your public health emergency response roles

If we are to respond rapidly as public health providers, we do not have the luxury of taking a lot of time to try to reach 30 different people.

This slide illustrates the reasons why it is important to keep our number of personal telephone calls to a minimum in a disaster.

The Family Communication Plan: Key Elements

- Make sure everyone knows contact numbers and how to get in touch
- Keep a list of emergency numbers near the phone at all times
  - Include list of physician's telephone numbers
- Identify an out-of-state "point of contact" to call in case of emergency
- Identify a local point of contact who is not involved in emergency response
- Establish a family "phone tree" in advance

This slide illustrates the key components of a family communication plan.

Public health workers can and should keep their number of personal calls to **2**.

The first call is to an out of state point of contact, whose job it is to initiate a telephone tree that reaches all the people that you would otherwise have to call yourself! The designated out of state point of contact and the telephone tree needs to be established in advance!

Why out of state? Two reasons: 1) the out of state person is physically removed from the disaster occurring in your area.; 2) in an emergency affecting local telephone networks, it may be easier to reach an out of state person than a local person, since the local lines may be tied up or inoperative.

The second call you should make is to a local point of contact who is not involved in emergency response. This person's job will be to perform all the family obligations that you would otherwise have to do yourself – for example, picking up the kids from school, getting them dinner, housing them, etc. Even if the local lines are inoperative, this local person should spring into action automatically to perform these duties in an emergency.

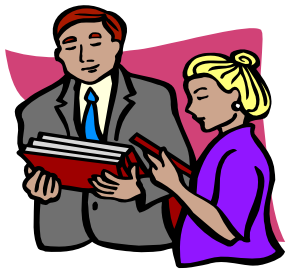
The Family Communication Plan: Key Elements

- **Select a "safe room" in the home where everyone can gather**
  - Best choice: interior room above ground with few windows and doors
- **Be personally reachable during emergencies**
  - Home telephone
  - Cellular phone
  - Blackberry
  - Pager

This is the shelter-in-place portion of our talk. In some circumstances, it may be safer to "stay put" in your home or office building in an emergency – this is called "sheltering-in-place". The designated room where sheltering-in-place occurs is called the "safe room".

This safe room should have certain characteristics. For a NON-WIND, NON-RADIOLOGIC EMERGENCY, the safe room should be above ground with few windows and doors. This is because most chemicals we would be concerned about are heavier than air, so they would sink to the ground…so…you would want to be HIGHER UP. In a wind emergency or radiological emergency, the safe room should be as low as possible (e.g., basement).

Important Note: *Sheltering-in-place is a TEMPORARY measure ONLY – meaning several hours, perhaps up to a day at the most. Duct tape is used to seal off the designated safe room ONLY – it should NOT be used to seal off one's entire home or office building. There have been deaths in Israel of individuals who inappropriately used duct tape to seal off their entire home, so that they tragically suffocated to death.*



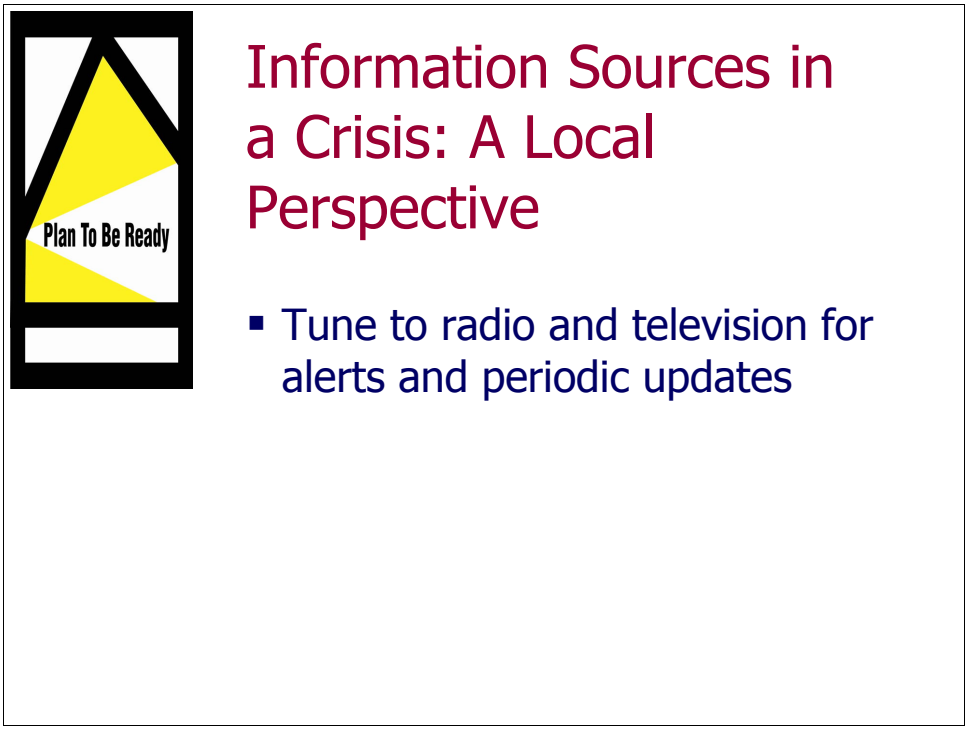
Learning More about Readiness

Step 3 of personal and family preparedness is knowing where to learn more about readiness.

Essential Planning Elements

- **Know** where to turn for information in a crisis
- **Understand** key health care issues following mass casualty incidents and how you can prepare yourself and your family for these issues
- **Consider** individuals with special needs
- **Understand** answers to FAQs

These are the 4 essential planning elements of learning more about readiness.



As we mentioned earlier, the most reliable source for situation updates in a disaster is the BATTERY POWERED RADIO.

Most jurisdictions have one or two radio/television “stations of choice” for updates in an emergency. For example, in Baltimore, the radio station of choice most directly connected to emergency updates is WBAL AM 1090.

The most reliable TV station for these updates in Baltimore is WBAL TV (Channel 11 – NBC affiliate). Your health department’s preparedness directors will let you know what the most reliable station(s) are for situational updates in an emergency.

Healthcare Provider Considerations

- Healthcare delivery systems will quickly reach maximum capacity
- Medical advice/physical examinations may be limited
- Elective or postponable surgeries will be cancelled
- Existing health conditions may be complicated during stressful situations

As potential providers of care in a disaster, it is important to understand some of the key healthcare consideration that we may face.

Many individuals who self-report to clinics and emergency departments in disasters have not necessarily been impacted by the agent physically, but think they may have or are experiencing anxiety related symptoms. An unfortunate – and inaccurate term – that sadly has been used to describe these individuals is “the worried well”. This term is inaccurate because we know that stress worsens a number of health conditions, and in a very real sense, “worried” individuals are not “well.”

As a result of patients who seek medical attention en masse in a disaster, we often experience a “surge” of patients in our emergency facilities and clinics following a disaster. The word “surge capacity” refers to the ability of our public health infrastructure to deal with this large additional influx of patients.

Consequently, in a disaster contexts, medical advice and physical exams will need to be focused and efficient; elective or postponable surgeries will be cancelled; and we will need to take care of patients with chronic health conditions worsened by stress (examples: high blood pressure; diabetes; asthma).

Advance Planning

- **Things you should do:**
  - Have all prescriptions
  - Keep 3 days of prescriptions on hand at all times
  - Have your insurance information available
  - Have immunization record handy
  - Know style and serial number of medical devices (e.g., pacemakers)
  - List known food and drug allergies
  - Write down the health conditions of your immediate family

This slide lists things you and your families can do to address these unique health care issues that we face in a disaster.

Advance Planning

- Attend a first aid/CPR class
- Memorize two routes to the office of your health care provider
- Hospital visits should be reserved for known exposures, trauma, and other critical health events
- Donate blood to save lives; it will be critically needed

Here are other aspects of advance planning to consider, to help address these disaster health care issues.

We will focus here on four special needs populations here for disaster planning.

1) Children are acutely perceptive to how “in control” their parents/guardians are in an emergency. Having a personal/family preparedness plan and sharing it with your children can provide them with a considerably greater sense of security. This doesn’t mean, of course, frightening kids by discussing doomsday scenarios. Instead, it means discussing the aspects of your family preparedness plan, including the location of the safe room; who will pick them up from school and get them dinner, etc. if you are called into work in an emergency; the contents and location of your family’s emergency kit; etc.
2) Elderly individuals are often prone to a number of chronic health conditions that can be worsened by stress. Making sure that your elderly relatives have a reserve supply of medication, for example, is important.
3) If you are the primary caregiver for a disabled individual (or are disabled yourself), it is important to consider methods of evacuation, etc. that may pose unique challenges.
4) People have run into burning buildings after their pets, so we must not downplay the importance of preparedness planning for your pet. It is a good idea to discuss preparedness issues with the veterinarian.

FAQ #1: Should I Purchase a Gas Mask?

- **NO!**
- A gas mask will only protect you if you are wearing it during an attack
  - It is highly unlikely that you will know when an attack is coming
- The mask must be of the right type, must fit properly, and requires training to be used effectively

The next several slides show the most frequently asked questions about disaster preparedness and their answers.

FAQ #2: What About Disposable Masks?

- Disposable, paper masks (e.g., N95 masks) suffer from the same inadequacies as gas masks in a biological weapons attack situation—when to wear the mask, proper fit, etc.—and would likely offer little protection, if any, from a BW attack
- In addition they provide no protection against chemical attacks

For a few reasons we do not recommend, in general, that the public purchase disposable masks for their emergency kits.

1) Any dense weave cotton material snugly covering one's nose and mouth can help to filter contaminants in an emergency.
2) A federally supplied national stockpile (Strategic National Stockpile) will provide necessary supplies as needed for an affected community.
3) Disposable masks provide no protection against chemical attacks.

If you are a patient care provider, it may be worthwhile to be fit tested for an N-95 mask. Fit testing is a procedure that ensures that the mask is working properly and has the correct fit.

Plan To Be Ready

FAQ #2: What About Disposable Masks?

- Nevertheless—they may help prevent exposure to potentially dangerous substances aerosolized after an explosion
- Any dense-weave cotton material that snugly covers your nose and mouth can help filter contaminants in an emergency

More info at http://www.ready.gov/clean_air.html

FAQ #3: What Is "Shelter-in-Place"?

- **Shelter-in-place** means:
  - Selecting a small, interior room—with no or few windows
  - Sealing the room off to limit airflow (e.g., duct tape/plastic) into the room
  - Taking temporary cover there to reduce exposure to potentially dangerous substances in the air
- It does **not** mean sealing off your entire home or office building

We have already talked about sheltering-in-place – remember this is a TEMPORARY measure (usually up to a day at most).

Additional resources:
http://www.redcross.org/services/disaster/beprepared/shelterinplace.pdf
http://www.ready.gov/stay_or_go.html

FAQ # 4: Should I Shelter-in-Place?

- Whether to shelter-in-place depends on the particular circumstances of the attack
- In a **covert biological attack,** you will not know when to seal off a room and stay in there
- Nevertheless, it is possible that circumstances could require sheltering-in-place
  - Listen to health authorities

Listen on your battery powered radio to get additional updates from local authorities on whether to shelter in place.

More info at **http://www.ready.gov/stay_or_go.html**

FAQ #5: Should I Stockpile My Own Antibiotics?

- **NO!**
- **Why not?**
  - No single antibiotic protects against all potential bio-weapons agents
  - Ineffective against viruses
  - Limited shelf life
  - Can have serious side effects
  - Should only be taken with medical guidance

The answer is clearly no, for the reasons specified on the slide. In addition, the Strategic National Stockpile will provide sufficient antibiotics for an affected community within 12 hours of request anywhere in the country.

FAQ #6: So What Can I Do?

- **The most important things to do following a mass incident are:**
  - Remain calm
  - Be patient
  - Listen carefully to information from and follow the advice of medical and public health authorities
  - Implement personal/family preparedness communications plan
  - Be accessible and ready to serve in your public health response roles per your health department's guidance

The public tends to be much calmer in emergencies than we might expect. For example, we have heard reports about occupants of the World Trade Center calmly helping coworkers down smoke-filled flights of stairs on September 11th. You may also remember the blackouts that occurred in New York and several other cities during the summer of 2003 – remember the images of New Yorkers walking in a calm, organized fashion across the bridge.

The public also tends to be patient. Remember Chief Moose's press conference during the sniper shootings – he often asked the public to remain patient until more information was (or could be made) available. The public will be patient as long as: 1) risk communication messages and guidance are consistent across agencies; 2) regular updates are provided and promises for information updates are kept.

This is the time to implement your personal/family preparedness plan. Remember that after a disaster has occurred, it is too late to do this – ADVANCE planning is the key.

Lastly, each of you has a critical role to play in public health response efforts in your community. Being accessible and ready to serve is critical in this all-hazards world of public health preparedness. These personal/family preparedness tips are intended to be practical approaches to allow you to perform your valuable response roles while keeping your family safe and informed.

Where to Get More Information

- **By U.S. mail/phone**
- U.S. Department of Homeland Security
  Washington, D.C. 20528
  1-800-BE-READY
- Red Cross Central Maryland Chapter
  4700 Mount Hope Dr
  Baltimore, MD 21215-3231
  Phone: 410-764-7000

Where to Get More Information

On the Web

- http://www.redcross.org/services/disaster/beprepared/hsas.html
- http://www.ready.gov/
- http://www.fema.gov/areyouready/
- http://www.dhs.gov/dhspublic/theme_home2.jsp

Additional Information Resources

- **CDC Emergency Preparedness and Response Website**
  - http://www.bt.cdc.gov/planning/index.asp
- **Johns Hopkins Center for Public Health Preparedness Website**
  - http://www.jhsph.edu/CPHP/
- **Department of Homeland Security Website**
  - http://www.dhs.gov/dhspublic/
- **Columbia University School of Nursing: Bioterrorism and Emergency Readiness Competencies for All Public Health Workers**
  - http://cpmcnet.columbia.edu/dept/nursing/institute-centers/chphsr/btcomps.pdf

Thank You

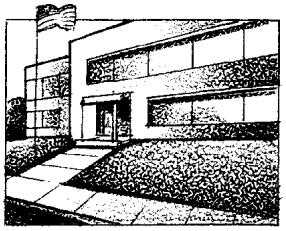
Questions?

HURRICANE • FLASH FLOOD • FIRE • HAZARDOUS MATERIALS SPILL • EARTHQUAKE • TORNADO • WINTER STORM

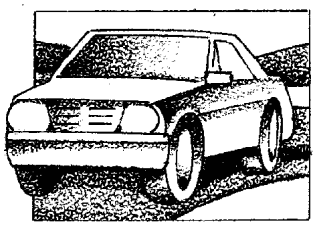
Your Family Disaster Plan

Where will your family be when disaster strikes? They could be anywhere—

at work



at school



or in the car.

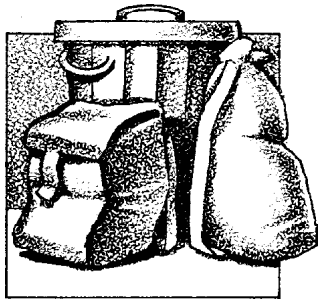
How will you find each other? Will you know if your children are safe?

Disaster can strike quickly and without warning. It can force you to evacuate your neighborhood or confine you to your home. What would you do if basic services–water, gas, electricity or telephones–were cut off? Local officials and relief workers will be on the scene after a disaster, but they cannot reach everyone right away.

Families can–and do–cope with disaster by preparing in advance and working together as a team. Follow the steps listed in this brochure to create your family's disaster plan. Knowing what to do is your best protection and your responsibility.

EMERGENCY SUPPLIES

Keep enough supplies in your home to meet your needs for at least three days. Assemble a Disaster Supplies Kit with items you may need in an evacuation. Store these supplies in sturdy, easy-to-carry containers such as backpacks, duffle bags or covered trash containers.



Include:

- A three-day supply of water (one gallon per person per day) and food that won't spoil.
- One change of clothing and footwear per person, and one blanket or sleeping bag per person.
- A first aid kit that includes your family's prescription medications.
- Emergency tools including a battery-powered radio, flashlight and plenty of extra batteries.
- An extra set of car keys and a credit card, cash or traveler's checks.
- Sanitation supplies.
- Special items for infant, elderly or disabled family members.
- An extra pair of glasses.

Keep important family documents in a waterproof container. Keep a smaller kit in the trunk of your car.

UTILITIES

Locate the main electric fuse box, water service main and natural gas main. Learn how and when to turn these utilities off. Teach all responsible family members. Keep necessary tools near gas and water shut-off valves.

Remember, turn off the utilities only if you suspect the lines are damaged or if you are instructed to do so. *If you turn the gas off, you will need a professional to turn it back on.*

4 Steps to Safety

1

Find Out What Could Happen to You

Contact your local emergency management or civil defense office and American Red Cross chapter — be prepared to take notes:

- ❑ Ask what types of disasters are most likely to happen. Request information on how to prepare for each.
- ❑ Learn about your community's warning signals: what they sound like and what you should do when you hear them.
- ❑ Ask about animal care after disaster. Animals may not be allowed inside emergency shelters due to health regulations.
- ❑ Find out how to help elderly or disabled persons, if needed.
- ❑ Next, find out about the disaster plans at your workplace, your children's school or daycare center and other places where your family spends time.

2

Create a Disaster Plan

Meet with your family and discuss why you need to prepare for disaster. Explain the dangers of fire, severe weather and earthquakes to children. Plan to share responsibilities and work together as a team.

- ❑ Discuss the types of disasters that are most likely to happen. Explain what to do in each case.
- ❑ Pick two places to meet:
  1. Right outside your home in case of a sudden emergency, like a fire.
  2. Outside your neighborhood in case you can't return home. Everyone must know the address and phone number.
- ❑ Ask an out-of-state friend to be your "family contact." After a disaster, it's often easier to call long distance. Other family members should call this person and tell them where they are. Everyone must know your contact's phone number.
- ❑ Discuss what to do in an evacuation. Plan how to take care of your pets.

Fill out, copy and distribute to all family members

Family Disaster Plan

Emergency Meeting Place _____ (outside your home)

Meeting Place _____ (outside your neighborhood) Phone _____

Address _____

_____

Family Contact _____ (name)

Phone ( ) _____ (day) Phone ( ) _____ (evening)

3

Complete This Checklist

- ❑ Post emergency telephone numbers by phones (fire, police, ambulance, etc.).
- ❑ Teach children how and when to call 911 or your local Emergency Medical Services number for emergency help.
- ❑ Show each family member how and when to turn off the water, gas and electricity at the main switches.
- ❑ Check if you have adequate insurance coverage.
- ❑ Teach each family member how to use the fire extinguisher (ABC type), and show them where it's kept.
- ❑ Install smoke detectors on each level of your home, especially near bedrooms.
- ❑ Conduct a home hazard hunt.
- ❑ Stock emergency supplies and assemble a Disaster Supplies Kit.
- ❑ Take a Red Cross first aid and CPR class.
- ❑ Determine the best escape routes from your home. Find two ways out of each room.
- ❑ Find the safe spots in your home for each type of disaster.

4

Practice and Maintain Your Plan

- ❑ Quiz your kids every six months so they remember what to do.
- ❑ Conduct fire and emergency evacuation drills.

Year	Drill Date
_____	_____
_____	_____
_____	_____

- ❑ Replace stored water every three months and stored food every six months.
- ❑ Test and recharge your fire extinguisher(s) according to manufacturer's instructions.
- ❑ Test your smoke detectors monthly and change the batteries at least once a year.

Jan. ❑	July ❑
Feb. ❑	Aug. ❑
Mar. ❑	Sep. ❑
Apr. ❑	Oct. ❑
May ❑	Nov. ❑
June ❑	Dec. ❑

Change batteries in _____ (month) each year.

NEIGHBORS HELPING NEIGHBORS

Working with neighbors can save lives and property. Meet with your neighbors to plan how the neighborhood could work together after a disaster until help arrives. If you're a member of a neighborhood organization, such as a home association or crime watch group, introduce disaster preparedness as a new activity. Know your neighbors' special skills (e.g., medical, technical) and consider how you could help neighbors who have special needs, such as disabled and elderly persons. Make plans for child care in case parents can't get home.

HOME HAZARD HUNT

During a disaster, ordinary objects in your home can cause injury or damage. Anything that can move, fall, break or cause a fire is a home hazard. For example, a hot water heater or a bookshelf can fall. Inspect your home at least once a year and fix potential hazards.

Contact your local fire department to learn about home fire hazards.

EVACUATION

Evacuate immediately if told to do so:

- Listen to your battery-powered radio and follow the instructions of local emergency officials.
- Wear protective clothing and sturdy shoes.
- Take your Disaster Supplies Kit.
- Lock your home.
- Use travel routes specified by local authorities — don't use shortcuts because certain areas may be impassable or dangerous.

If you're sure you have time:

- Shut off water, gas and electricity before leaving, if instructed to do so.
- Post a note telling others when you left and where you are going.
- Make arrangements for your pets.

IF DISASTER STRIKES

If disaster strikes

Remain calm and patient. Put your plan into action.

Check for injuries

Give first aid and get help for seriously injured people.

Listen to your battery powered radio for news and instructions

Evacuate, if advised to do so. Wear protective clothing and sturdy shoes.

Check for damage in your home. . .

- Use flashlights — do not light matches or turn on electrical switches, if you suspect damage.
- Check for fires, fire hazards and other household hazards.
- Sniff for gas leaks, starting at the water heater. If you smell gas or suspect a leak, turn off the main gas valve, open windows, and get everyone outside quickly.
- Shut off any other damaged utilities.
- Clean up spilled medicines, bleaches, gasoline and other flammable liquids immediately.

Remember to. . .

- Confine or secure your pets.
- Call your family contact— do not use the telephone again unless it is a life-threatening emergency.
- Check on your neighbors, especially elderly or disabled persons.
- Make sure you have an adequate water supply in case service is cut off.
- Stay away from downed power lines.

The Federal Emergency Management Agency's Community and Family Preparedness Program and the American Red Cross Community Disaster Education Program are nationwide efforts to help people prepare for disasters of all types. For more information, please contact your local emergency management office and American Red Cross chapter. This brochure and other preparedness materials are available by calling FEMA at 1-800-480-2520, or writing: FEMA, P.O. Box 2012, Jessup, MD 20794-2012.
Publications are also available on the World Wide Web at:
FEMA's Web site: http://www.fema.gov
American Red Cross Web site: http://www.redcross.org

Ask for: *Are You Ready?*, *Your Family Disaster Supplies Kit* and *Food & Water in an Emergency.*

Local sponsorship provided by:

September 1991
FEMA L-191
ARC 4466

EARTHQUAKE • TORNADO • WINTER STORM • FIRE

Federal Emergency Management Agency

Your Family Disaster Pla

HURRICANE • FLASH FLOOD • HAZARDOUS MATERIALS SPIL

Montgomery County, Maryland

Home Guide to Emergency Preparedness

Dear Neighbors:

The events of the past year and a half have made us all aware of the need to be prepared for an emergency. You should be confident that Montgomery County will continue to do everything it can to prevent terrorism. We have been working together with other governments around the region and with the federal government to evaluate and update emergency response plans. Within our community our public health, fire and rescue and public safety personnel have been planning and preparing for the new realities of living in the Washington metropolitan area.

As you may already know, we have taken the critical step to vaccinate or provide medication to our frontline workers against smallpox and other biological agents. This was not an easy decision. But we did this so that our health professionals and emergency personnel will be ready to protect the public should a bioterrorism incident occur.

We will handle a biological threat just as we would any other threat to the public. Our health workers will open public clinics to dispense medications, should that be necessary. They recommend that everyone understand how to "shelter-in-place" should an incident occur. Staying in your homes, stocked with basic supplies, is the best form of self-sufficiency and protection. This and other information in these pages will help you plan for most emergency situations.

We live in times that are unsettling – even unnerving. To help settle those nerves, we urge everyone to create a personal family protection plan, in order to be as self-sufficient as possible. And stay tuned to the news for the latest information, and to avoid the spread of rumors.

I hope that we will never have to put our emergency response plans into action, but it is vital that everyone do their part to help keep their families and neighbors safe.

Douglas M. Duncan
County Executive

Bioterrorism: Frequently Asked Questions

Our new concern about bioterrorism has produced additional stress for many of us. Information on coping with this stress can be found on the County's website by clicking on "Bioterrorism."

Mental health professionals suggest that striking a balance between keeping up-to-date on current events and spending time pursuing enjoyable activities can be an effective way of dealing with stress. Get plenty of rest and exercise. Spend time with family and friends. Take a break from the news when needed.

What is bioterrorism?

Bioterrorism is the intentional release of harmful bacteria, viruses or other germs (called agents). Bioterrorism, like all forms of terrorism, aims to:

- injure or kill people
- cause panic and fear
- disrupt daily routines.

Unlike other forms of terrorism, a biological attack may not be immediately obvious. While you may see signs of a biological attack, which was sometimes the case with the anthrax mailings, it is likely that an unusual pattern or illness may be the first sign to health care personnel that an attack has occurred and you will learn of the danger through an emergency television or radio broadcast.

Could an agent be spread in a public water supply?

It's unlikely. An agent would most likely be too diluted to have much effect, if any (unless a vast amount was used). Also, most of the public water supply is filtered and treated.

What can we do?

Stay alert. This helps reduce the risk. And stay calm if an attack occurs. This helps government agencies control the situation and protect you.

What if an attack occurs?

- Listen for and follow instructions provided by TV and radio stations. Tune in to the emergency radio stations listed below, and County Cable Channel 6. Have a battery-powered radio or TV in the event of a power failure.
- Local authorities will give instructions. Follow their instructions, including whether to stay home, leave the area or go to an emergency shelter.
- Montgomery County Public Schools will issue instructions via TV and radio stations on plans for evacuating or sheltering students.
- Use common sense. Terrorists most often choose targets of national importance. It is unlikely that you would be the personal target of a terrorist attack.
- If you're at work, follow your emergency or escape plan.
- Montgomery County has an Emergency Operations Plan that details what should be done in any type of emergency situations. County staff regularly conduct training drills to deal with any emergency.

Biological Agents

Federal, state and local health care, fire and rescue and law enforcement agencies are forming plans to deal with these and other agents.

Anthrax
Anthrax spores may be spread by direct skin contact or through the air. Some symptoms of cutaneous (skin) anthrax include itching and boils. Symptoms of inhalation anthrax may be similar to the flu but without congestion. Anthrax is not contagious.

Smallpox - see following page

Botulism
Botulism may be spread through the air or by contaminated food. Symptoms include trouble seeing, breathing or swallowing. It is not contagious.

Tularemia
Tularemia is a disease caused by a bacterium found in animals and may be spread by breathing in the bacteria. Symptoms include sudden fever, chills, headaches, muscle aches and joint pain. It is not known to be spread from person to person.

Plague
Plague can be spread by infected fleas on rodents, or through the air. Symptoms include trouble seeing, breathing or swallowing. Plague is contagious.

Useful Phone Numbers and Information

Montgomery County has been working closely with federal, state and regional health and public safety agencies to respond quickly to any bioterrorism threat. The State of Maryland has designated the County as a regional center to administer smallpox vaccinations to neighboring jurisdictions and other emergency personnel.

To answer residents' concerns about recent bioterrorist threats, the county has established a 24-hour taped message at ***240-777-4200*** *(****TTY 240-777-4684)*** *in English and other languages. Information on bioterrorism is also available on the County's web site at* ***www.montgomerycountymd.gov.***

Emergencies Fire/Rescue, Police.....911 (Voice /TTY)

Police Non-emergency.....301-279-8000 (Voice/TTY)

Fire Non-emergency.....240-777-0744, TTY: 240-777-0725

Allegheny Power.....1-800-255-3443, TTY: 1-800-955-9445

American Red Cross.....301-588-2515
or MD Relay at 711

Verizon
Telephone repair:.....301-954-6260, TTY: 1-800-564-0999

BG&E.....1-800-685-0123,TTY: 1-800-735-2258

Crisis Center
(24-hour hotline).....240-777-4000, TTY: 240-777-4815

PEPCO
To report outages:.....1-877-737-2662
To report downed wires:..202-872-3432, TTY: 202-872-2368

Poison Center.....202-625-3333, TTY: 202-362-8563

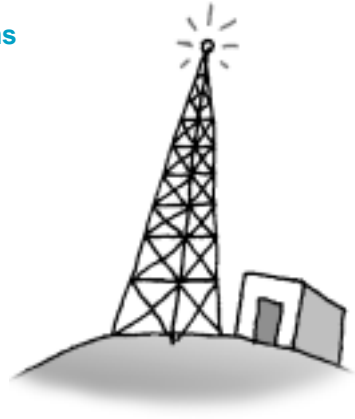
Washington Gas
To report gas leaks:.....1-800-752-7520
Emergencies:.....703-750-1400 ,TTY: 703-750-7975

WSSC (24 hrs)
Maintenance.....1-800-828-6439 (x4002)TTY: 301-206-8232

Montgomery County
Emergency Management.....240-777-2300
or MD Relay at 711

Emergency Radio Stations

WMAL.....630 AM
WTOP.....1500 AM
WTOP.....107.7 FM
WASH.....97.1 FM
WAMU.....88.5 FM
WBIG.....100.3 FM
WMZQ.....98.7 FM
WRC.....1260 AM
WTNT.....570 AM



Copies of this Home Emergency Preparedness Guide in Spanish, Korean, Vietnamese, French, Farsi, Cambodian and Chinese are available at the following locations:

Bethesda-Chevy Chase Regional Services Center
4805 Edgemoor Lane
Bethesda
301-986-4325, TTY: 301-986-4327

Eastern Montgomery Regional Services Center
3300 Briggs Chaney Road
Silver Spring
240-777-8400, TTY: 240-777-8418

Executive Office Building
Lobby Information Desk
101 Monroe St.
Rockville
240-777-1000, TTY: 240-777-2545

Mid-County Regional Services Center
2424 Reedie Dr.
Wheaton
240-777-8100, TTY: 240-777-8111

Silver Spring Regional Services Center
962 Wayne Ave.
Silver Spring
301-565-7300, TTY 1-800-735-2258

TESS Community Services Center
8513 Piney Branch Rd.
Silver Spring
301-565-7675 or via MD Relay at 711

Upcounty Regional Services Center
12900 Middlebrook Rd.
Germantown
240-777-8000, TTY: 240-777-8002

Some Common Questions and Answers about Smallpox

What should I know about smallpox?

Smallpox is an acute, contagious, and sometimes fatal disease marked by fever and a distinctive progressive skin rash. In 1980, the disease was declared eradicated following worldwide vaccination programs. However, in the aftermath of the events of September and October, 2001, the U.S. government is taking precautions to be ready to deal with a bioterrorist attack using smallpox as a weapon. As a result of these efforts: 1) there is a detailed nationwide smallpox response plan designed to quickly vaccinate people and contain a smallpox outbreak. 2) there is enough smallpox vaccine to vaccinate everyone who would need it in the event of an emergency.

How serious is the smallpox threat?

The deliberate release of smallpox as an epidemic disease is now regarded as a possibility, and the United States is taking precautions to deal with this possibility.

How dangerous is the smallpox threat?

Smallpox is classified as a Category A agent by the Centers for Disease Control and Prevention. Category A agents are believed to pose the greatest potential threat for adverse public health impact and have a moderate to high potential for large-scale dissemination. The public is generally more aware of category A agents, and broad-based public health preparedness efforts are necessary. Other Category A agents are anthrax, plague, botulism, tularemia, and viral hemorrhagic fevers.

If I am concerned about a smallpox attack, can I go to my doctor and get the smallpox vaccine? Is my previous vaccination still good?

At the moment, the smallpox vaccine is not recommended for members of the general public. In the event of a smallpox outbreak, however, there is enough smallpox vaccine to vaccinate everyone who would need it. A safer vaccine will be available in 2004 to the general public. If you were vaccinated years ago, that vaccine is no longer adequate protection.

What are the symptoms of smallpox?

The symptoms of smallpox begin with high fever, head and body aches, and sometimes vomiting. A rash follows that spreads and progresses to raised bumps and pus-filled blisters that crust, scab and fall off after about three weeks, leaving a pitted scar.

Is smallpox fatal?

The majority of patients with smallpox recover, but death may occur in up to 30 percent of cases. Many smallpox survivors have permanent scars over large areas of their bodies, especially their face. Some are left blind.

If someone comes in contact with smallpox, how long does it take to show symptoms?

After exposure, it takes between 7 and 17 days for symptoms of smallpox to appear (average incubation time is 12 to 14 days). During this time, the infected person feels fine and is not contagious.

How is smallpox spread?

Smallpox normally spreads from contact with infected persons. Generally, direct and fairly prolonged face-to-face contact is required to spread smallpox from one person to another. Smallpox also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Indirect spread is less common.

Is smallpox contagious before the smallpox symptoms show?

A person with smallpox is sometimes contagious with onset of fever, but the person becomes most contagious with the onset of rash. The infected person is contagious until the last smallpox scab falls off.

Is there any treatment for smallpox?

Smallpox can be prevented through use of the smallpox vaccine, which can be administered up to five days after exposure. There is no proven treatment for smallpox, but research to evaluate new antiviral agents is ongoing. Patients with smallpox can benefit from supportive therapy (e.g., intravenous fluids, medicine to control fever or pain) and antibiotics for any secondary bacterial infections that may occur.

Preparing Your Home for an Emergency

Planning for any emergency requires considering scenarios that could disrupt your daily life, affecting electricity, water, heat, air conditioning, telephone service and transportation. Consequently, you should plan to have food, water and other essentials to get you through the emergency. Most emergency planning experts suggest having enough supplies to last you and your family for three to five days.

Your Emergency Preparedness Kit

The seven basic items that should be stored in your home are water, food, first-aid supplies, clothing and bedding, tools, emergency supplies and specialty items. Keep the items that you would most likely need at home in one easy-to-carry container such as a clean, watertight can, camping backpack or duffel bag. Store it in a convenient place and put a smaller version in your car. Keep items in airtight plastic bags. Remember to change the stored water and rotate the food supplies every six months (place dates on containers). Check the supplies and re-think your needs every year. Consult your physician or pharmacist about storing prescription medications, and maintain copies of your prescriptions.

Water

Store water in plastic containers or purchase bottled water, avoiding containers that will decompose or break, such as glass bottles. Plan for one gallon of water per person per day. Water should be stored in a cool, dark place with the date labeled on the container. Tap water generally may be stored up to two weeks without further disinfection. Use 2-3 drops per gallon of standard household bleach to disinfect and store water in sterile containers.

Food

Store a supply of three to five days' worth of nonperishable food per person. Foods should require no refrigeration, preparation or cooking and little or no water. Examples include: ready-to-eat canned meats, fruits and vegetables; canned or boxed juices, powdered milk and soup; condiments such as sugar, salt and pepper; high-energy food like peanut butter, jelly, low-sodium crackers, granola bars and trail mix; vitamins; foods for infants or persons on special diets; cookies, hard candy, instant coffee and sweetened cereals. Bulk food items such as wheat, powdered milk, corn and soybeans can be stored for long periods of time.

First-Aid Kit

Assemble a first-aid kit for your home and each vehicle. Items should include sterile adhesive bandages in assorted sizes, gauze pads, hypoallergenic adhesive tape, triangular bandages, sterile roller bandages, scissors, tweezers, needle, moistened towelettes, antiseptic, thermometer, tongue blades, tube of petroleum jelly or other lubricant, safety pins, cleansing soap, latex gloves, and sunscreen. Include aspirin and non-aspirin pain medications, cough syrup, anti-diarrhea medication, Syrup of Ipecac, activated charcoal (to counter poisoning) and laxatives.

Tools and Supplies

Keep the following items handy for all-around use: extra batteries of assorted sizes (check shelf life before purchasing), paper cups, plates and plastic utensils, or mess kit; battery-operated radio, flashlight, carbon monoxide and smoke detectors, cash (include change) and/or traveler's checks, non-electric can opener and utility knife, small ABC fire extinguisher, tube tent, pliers, compass, waterproof matches, plastic storage containers, signal flares, paper and pencil, needles and thread, medicine dropper, shut-off wrench for house gas and water, whistle, plastic sheeting and a local map. For sanitation, pack toilet paper, soap and liquid detergent, feminine hygiene supplies, plastic garbage bags, a plastic bucket with lid, disinfectant and household chlorine bleach.

If you have pets, make sure you have an identification collar and rabies tag, a carrier or cage and leash, newspapers and plastic trash bags for handling waste and any medications, and at least a two-week supply of food and water and food bowls, along with veterinary records.

Shelter in Place

Wherever you are, at home, work or elsewhere, there might be situations when it's recommended that you stay where you are, or "shelter in place," in the event of a terrorist attack, whether it be a biological, chemical or radiological attack. This means that you will be asked to protect yourself and your family by staying sheltered in your home for a few days.

1. Select the room in which you will shelter. The safest place in your home during an emergency is a centrally located room or basement or one with as few windows and doors as possible.
2. Store emergency supplies in this area. An emergency could happen at any time, so it is best to stock supplies in advance and have everything that you need stored in the shelter. Keep three days worth of supplies (listed below). Separate the supplies you would take if you had to evacuate quickly, and put them in a backpack or container, ready to go.
3. Make sure that all family members know where the shelter is and what it is for. Caution them not to take any items from that area. If someone "borrows" items from your shelter, you may find that important items are missing when they are most needed.
4. If you have pets, prepare a place for them to relieve themselves in the shelter.
5. Every six months, check the supplies in your shelter. Replace any expired medications, food or batteries. Also, replace the water in your shelter every six months to keep it fresh.

Family Protection Supply List

- ✓ Water – one gallon per person per day
- ✓ Nonperishable food
- ✓ First aid supplies
- ✓ Clothing and bedding
- ✓ Tools
- ✓ Battery powered radio and extra batteries
- ✓ Flashlights and batteries
- ✓ Soap, water and bleach

For a complete list of what to include, contact the American Red Cross at 301-588-2515 or go to www.redcross.org.

If you should need to evacuate

Unless in immediate danger, or if an incident is inside, do not evacuate unless instructed. If instructed, use routes suggested by authorities. Others may be blocked, jammed or close to danger.

If you should need to shelter in place

1. Before entering the shelter, turn off fans, air conditioners, and forced-air heating units that bring air in from the outside. Close and lock all windows and doors, and close fireplace dampers.
2. Seal all doors, windows and vents in the room in which you will shelter in place.
3. Keep your radio tuned to an emergency response network at all times for updates on the situation. The announcers will provide information about when you may leave your shelter and whether you need to take other emergency measures.

Have a family communication plan

Every household should decide ahead of time how it will stay in touch in case of an emergency.

1. Pick two meeting places: a place near your home – in case of a sudden emergency, such as a fire— and a place outside your neighborhood in case you cannot return home after a disaster.
2. Pick one out-of-state and one local friend or relative for family members to call if separated by disaster (it is often easier to call out-of-state than within the affected area).
3. Plan what to do with pets if you have to evacuate.

Public emergency shelters

When conditions warrant, Montgomery County's Emergency Management Office may establish community-based shelters for local residents. Normally, shelters are set up in public high schools, recreation centers or other appropriate facilities where residents can seek refuge, as well as sleep and eat. If you are instructed to go to a public emergency shelter, you should bring a change of clothing, bathing and sanitary supplies, medications, denture and eye care materials, and special dietary supplies or requirements. Pets, except for service dogs, are not allowed in the shelters.

Emergency Planning for Frail Seniors and People with Disabilities

If you are a person who is elderly and consider yourself frail or are a person with a disability, you are encouraged to have a plan in the event of an emergency that addresses your particular needs. The first step is to obtain and complete the *File of Life,* provided free by the Department of Health and Human Services, Aging and Disability Information and Assistance Unit 240-777-3000 Voice, 240-777-4575 TTY or email to hhsmail@montgomerycountymd.gov. The *File of Life* organizes your health history, medications, allergies, etc. in one place in the event emergency personnel need to treat you. The *File* has a magnet so that it can be kept on your refrigerator door. You might also want to carry one with you.

The County encourages every resident to develop a personal plan in the event of an emergency. If you need assistance in developing this plan, please let us know. The following questions may be helpful in thinking about the issues that your plan needs to include:

- How will I arrange for personal care assistance if in-home care support is unavailable?
- How will I get food, water and other necessary supplies?
- If I am dependent on home-delivered meals, and deliveries are interrupted, how will I get food?
- How will I fill prescriptions for life-sustaining and other important medications, and replace vital personal equipment (e.g., hearing aids, wheelchair batteries) damaged or lost in the disaster?
- If I live in a group home or assisted living facility, do I know whether the facility has a disaster plan and is taking measures to support me in a disaster?
- Is there a designated person who will contact me to check on my status and help me get the services I need? This could be a friend, family member, a personal care attendant or an agency.
- If you have a special need or medical consideration, please be sure to indicate that whenever calling for help so that emergency personnel can be responsive to your needs.

There is a free on-line service called Emergency Email and Wireless Network that alerts people to emergencies via email, call phone or pager. It is particularly useful for people who are deaf or hard of hearing, but it can be used by anyone. You can sign up at www.emergencyemail.org.

The following websites may also provide helpful information on emergency planning:

The National Organization on Disability
www.nod.org

U.S. Access Board – Emergency Planning
www.access-board.gov/evac.htm

Children in School

In the event of a community or national emergency, the Montgomery County Public Schools and area private schools will work closely with public health and safety officials and act at the direction of emergency response personnel. While parents can always pick up their children during the school day, the best place for children during a regional or local crisis might very well be the school itself, where they will remain under supervision and be protected from hazards outside. Students may be held in school, dismissed early or transferred to evacuation sites, depending on the situation and direction of authorities. Parents are advised to pay close attention to public announcements on radio, television and the Internet. MCPS parents may sign up for automatic email updates directly to their mailbox at www.Schools-Out.com. To subscribe or unsubscribe, scroll to the bottom of the page and click "**I WANT E-MAIL.**" Private school parents should contact their school directly to learn about security and communications procedures.

Stay Informed

Getting information during an emergency is vital. Stay tuned to radio and television stations to obtain the latest information. Purchase a battery-operated radio and keep it tuned to a local all-news or talk-radio station. Updated information can also be found on the County Cable Montgomery- Channel 6, the County's website at www.montgomerycountymd.gov or by calling the Bioterrorism Information Line at 240-777-4200.

Additional Resources

American Red Cross: www.redcross.org

Centers for Disease Control
Public Health Emergency Preparedness: www.bt.cdc.gov

Federal Emergency Management Agency: www.fema.gov

Maryland Emergency Management Agency:
www.mema.state.md.us

U.S. Department of Homeland Security: www.ready.gov

Montgomery County Public Schools:
www.mcps.k12.md.us/info/emergency/

National Weather Service: www.nws.noaa.gov

Montgomery County Division of Fire and Rescue Services: www.montgomerycountymd.gov/services/dfrs/

Additional copies of this publication are available in public libraries or by calling Montgomery County's Department of Health and Human Services at 240-777-1245.

Alternative formats of this document are available upon request by calling 240-777-6530 or email to hhsmail@montgomerycountymd.gov.

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Home Guide to Emergency Preparedness

This publication was produced with grant funding from the Centers for Disease Control.

9. All Hazards Model

The All-Hazards Model

What is the All-Hazards Model?

The model establishes a framework for preparedness, response and recovery for any public health emergency regardless of the incident's cause.

What are some examples of incidents where an All-Hazards Model would apply?

Hurricanes
Earthquakes
Terrorism attacks such as:
- Chemical
- Nuclear
- Biological
- Incendiary

What are some common elements of a public health emergency that would make an All-Hazards Model work?

The establishment of an Incident Command System to identify and direct the response operation.

The identification of a spokesperson to deliver well-crafted communication to the public.

The assignment of roles and responsibilities to deal with the health emergency.

The integration of responders from various disciplines such as health, fire, and safety.

What are the special considerations in using the All-Hazards Model?

Special skills must be developed and knowledge acquired to deal with threats, such as biological, chemical, and nuclear threats, as these events are not dealt with on a routine basis.

All-Hazards Model for Preparedness

Diane E. Zerbe, MHS
Johns Hopkins
Center for Public Health Preparedness

What is the All-Hazards Model? This model establishes a framework for preparedness, mitigation, response and recovery for any public health emergency regardless of the incident's cause

Be Informed

- What natural disasters and emergencies are most common in your area?
- Are chemical plants or nuclear facilities close to your center of operation?
- Learn what to do during a Biological, Chemical, Explosive, Nuclear or Radiological Attack.

What are some pieces of information that would be helpful in the development of an All-Hazards Model for your area?

Continuity Planning

- How should staff train?
- What materials, procedures, and equipment are absolutely necessary to keep your agency running?
- Identify key suppliers, shippers, resources and others you must interact with to keep operations going.
- Identify alternate supplies in case your primary contractor cannot supply your needs.
- Is there an alternate location for you to provide services if the agency buildings/clinics are not accessible?

In the event of any emergency/disaster, what planning is necessary to keep your agency/department functional? Are these plans written and accessible to staff and decision-makers?

These are some methods of pre-event, event, and post-event communication planning. A newsletter or agency/department intranet can relate training information, planning tips, and agency policy pertaining to emergencies and disasters. Periodic news letters can keep preparedness and response topics on the "radar screen" of employees. In the course of an event, calling trees, agency websites, and e-mail, call-in voice recordings are all tools that can be used to inform staff of response plans.

In developing an All-Hazards Model for your agency/department, several of your staff may have disabilities that should be considered when developing preparedness and response plans. These staff may have specific needs to be addressed in order to carry out their job functions. These staff may also give valuable information in planning for members of the community with disabilities.

Each agency site should either have a plan to obtain or on-site emergency supplies. Staff may be required to remain at the site for extended periods of time. Continuity of the agency operation is vital and records should be available for vital services.

Shelter-in-place, or evacuation notices should be clear and delivered to staff as soon as possible.

Coordinated Efforts

- Encourage employees to take basic First Aid and CPR training.
- Work with close by business to conduct evacuation drills and emergency exercises.
- Communicate with first responders, emergency managers, community organizations and utility providers.
- Review plans frequently—at least annually.

In the event of an emergency/disaster, a coordinated effort between business, government, private agencies is crucial to a successful and timely response and recovery operation. Exercises and drills should involve all possible responders.

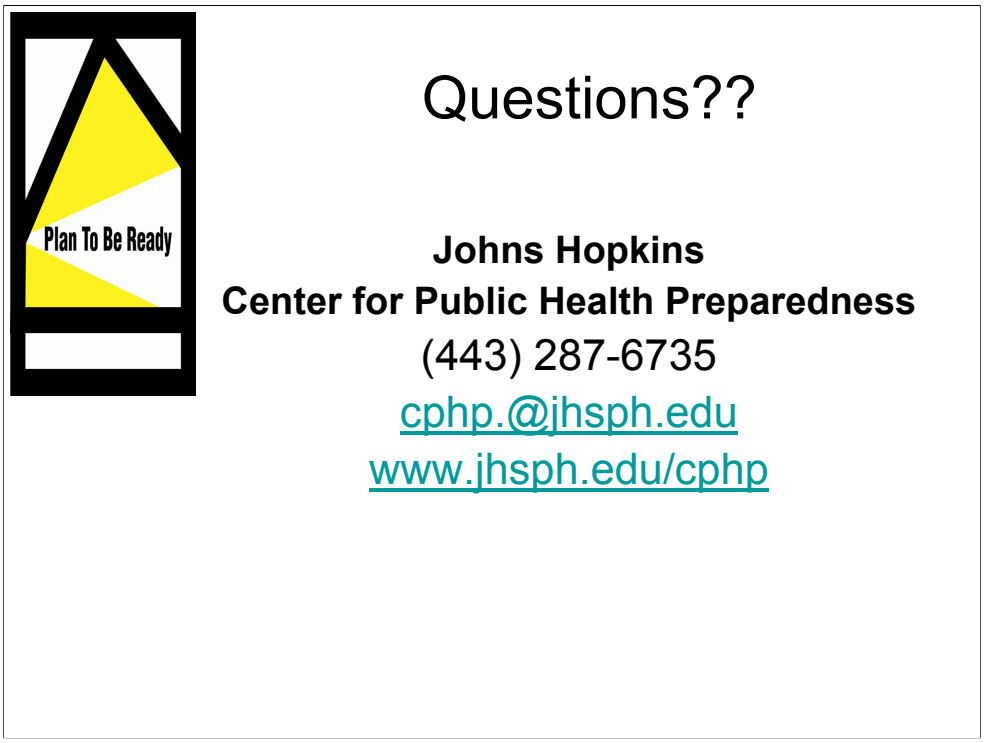
Communicate with employees

- Plan and practice what you intend to do during an event (drills and exercises)
- Promote family and individual preparedness
- Write a crisis communication plan
- Support employee health after an event

In the post 911 environment, it is evident that the quick and rapid response by well trained State and local employees to an event is crucial. These employees have reasonable concerns about their safety and that of their families. These concerns will need to be addressed to help ensure that the employees respond to an event.

The All-Hazards model allows for the development pf a dual-use response infrastructure that improves capacity to all hazards while providing for the unique and complex aspects of a terror attack.

The All-Hazards Model does not mean a perfect plan for every conceivable type of disaster. This is an adaptable plan that provides the basis for dealing with a variety of hazards and disasters, including terrorism. The plan is the starting point and having generic evacuation, shelter-in- place, debris management, and other programs ready to be adapted to circumstances is far more efficient and understandable than standalone programs for each type of disaster.
The risks posed by earthquakes in California and by hurricanes along the Gulf Coast may be potentially far greater than those posed by terrorists with explosive devices or dirty bombs . The risks posed by influenza and other diseases (witness the SARS epidemic) also may be far greater than those posed by terrorists with anthrax, sarin, or other biological and chemical agents. The preparedness, mitigation, response and recovery operations involved with addressing these threats have a basic commonality of planning and coordinating efforts while more effectively using resources.



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10. Additional Resources

SAMPLE TRAINING AGENDA

Public Health Emergency Preparedness Training

Presented by: Johns Hopkins Center for Public Health Preparedness and
Montgomery County's Public Health Services and Advanced Practice Center for Public Health Preparedness

LOCATION 3.5 hours

Objectives

- To learn key concepts of WMD and an All-Hazards approach to emergencies;
- To identify recreations' role in a public health emergency; and
- To receive an overview of developing a Family Plan, risk communication, and mental health issues during a public health emergency.

30 minutes
Lunch & Registration

15 minutes
Welcome/Overview (housekeeping)
Montgomery County Department of Recreation
Montgomery County Public Health Services

40 minutes
Public Health Services, Recreation Role, Incident Command System, & Video
Montgomery County Public Health Services

15 minutes
BREAK

30 minutes
Weapons of Mass Destruction & All Hazards Approach
Johns Hopkins University

65 minutes
Risk Communication, Mental Health and Family Plan
Johns Hopkins University

15 minutes
Questions & Answers, Wrap-Up, & Evaluation
Montgomery County Public Health Services

APC Advanced Practice Centers

JOHNS HOPKINS CENTER FOR PUBLIC HEALTH PREPAREDNESS

MONTGOMERY COUNTY 17 76 MARYLAND

Responding to Public Health Emergencies for Non-Medical Personnel

Montgomery County Department of Health and Human Services
June 2005

Instructors

Peggy DeGeorge, RN
Elizabeth Hughes, RN, PhD

Carol Jordan, RN, MPH
Kathy Wood, RN, MPH

Module I
Public Health Emergency Preparedness and Response in the 21st Century

Objectives–

- Specify the types of threats the public faces in the 21st century
- Outline key public health emergency preparedness and response measures needed to deal with these threats

Prior to 9/11- Focus of public health

- Natural disasters/hazards
  - Floods
  - Hurricanes
  - Tornadoes
  - Earthquakes
  - Pollution – air and water
- Eradication / prevention of communicable infectious diseases
- Treatment of new infectious diseases, SARS, HIV, Eboli
- Collapse of USSR and a perceived lessening of nuclear attack

Following 9/11

Focus of public health – expanded to man-made threats that create terror

Definition of terror- politically motivated violence or threat of violence against civilians (noncombatants) to extract revenge or intimidation

- Need for an operational model that addresses natural disasters, i.e. earthquakes, hazards, influenza, sars, and terrorist threats

Terrorism Threats

- Conventional explosives (mass trauma events)
- Chemical
- Biological
- Nuclear
- Economic
- Cyber

Components of the All-Hazards Model

- Mitigation – lessen the hazard
- Preparedness
- Response
- Recovery

All-Hazards Plan

- Evacuation
- Shelter-in-place
- Medical Management
- Debris Management
- More efficient than standalone plans

Post 9/11 findings – impact on public health readiness and response

1. Lack of sufficient disaster planning
   - One jurisdiction to another
   - Building staff capacity – a key component to:
     - improve capacity depth
     - improve effectiveness of experts
   - Clarification of roles for responders

Post 9/11 findings cont.

2. Linkages and collaboration with other agencies, institutions involved in response, i.e. police, fire dept., county governments, private sector, red cross, volunteers
3. Capacity to detect threats/disease surveillance
4. Capacity to detect chronic disease surveillance post
   - chemical attacks
   - nuclear attacks

Public response to a bioterrorist attack

Organization/clarification of roles and responders expertise can help dissipate

- Panic
- Social disorder
- Civil unrest

Possible reactions

- Reasoned caution
- Resourcefulness
- Resiliency
- Humanitarianism

Possible reactions cont.

- Panic, fear, sadness, mistrust
- Magical thinking about bacteria/viruses
- Fear of invisible agents contagion
- Anger at terrorists or government
- Man-made (terrorism) with intent to cause mass destruction causes more distress

Two most common needs following crisis

- Re-establish a sense of safety
- Make meaning out of incident by doing something active
  - Recognition of expertise
  - Use of expertise

Summary

Man-made threats designed to terrorize populations in noncombatant situations

- explosives
- biological
- nuclear
- economic
- cyber
- chemical

Summary cont.

Public health readiness and response measures

- Building staff capacity (role delineation)
- Linkages and collaboration with other agencies, institutions
- Capacity to communicate
- Detection of threats and disease surveillance

Module II
Biological Agents That Can Threaten the Public's Health

Objectives—

- State the rationale for public health emergency preparedness and response in the event of a biological attack
- Explain the treatment measures for five potential biological warfare agents

Biological Threats

A biological agent attack will generally have:

- The characteristics of a disease outbreak, in many cases similar to the flu
- A cooperative effort by our city, state and regional public health authorities
- Infection-control strategies

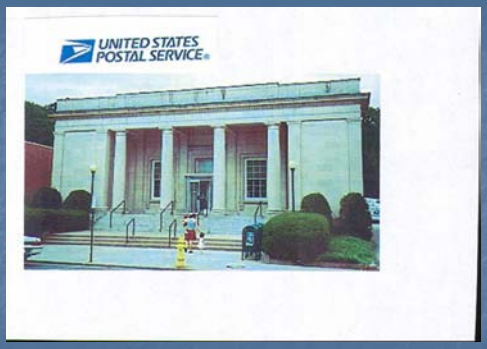
Biological Weapons are Unique

The consequence of a biological weapon attack could be an epidemic

What are the Major Threat Agents?

- **Category A Agents**
  - Highest priority agents
  - Can be easily spread or transmitted
  - Result in high lethality and have the potential for major public health impact
  - Might cause public panic and social disruption
  - Require special action for public health preparedness
    - Examples: Anthrax, Plague, Smallpox, Ebola

Source: CDC



Anthrax

- **Transmission**
  - Anthrax infection is not contagious
  - Transmitted by: - skin contact
    - contaminated food or water ingestion
    - bacteria inhalation
- **Symptoms**
  - *Respiratory*: Flu-like symptoms, difficulty breathing, and shock
  - *Skin:* Initial itching, lesions, and black ulcers
  - *Gastrointestinal*: Nausea, loss of appetite, vomiting and fever
- **Treatment**
  - Administer antibiotics within the first few days of exposure to prevent illness (Doxycycline or Cipro)

Botulism

- **Transmission**
  - Botulism is not contagious
  - Transmitted by: - aerosol inhalation
    - food ingestion
  - Botulism cannot survive standard public water treatments
- **Symptoms**
  - Double or blurred vision, difficulty swallowing or speaking, muscle weakness, paralysis and respiratory failure
- **Treatment**
  - Antitoxin horse serum can stop disease from worsening, but cannot immediately reverse paralysis

Plague

Three types of plague: bubonic, septicemic, pneumonic

- **Transmission**
  - Pneumonic plague is highly contagious
  - Inhalation spread results entirely in pneumonic plague
- **Symptoms**
  - Fever, chills, headache, weakness, breathing difficulties, cough, chest pain, and bloody sputum
- **Treatment**
  - Isolate or quarantine infected persons
  - Initiate antibiotic treatment within 24 hours of first symptoms (Doxycycline or Cipro)

Tularemia

- **Transmission**
  - Tularemia is not contagious
  - Ticks spread disease to humans
  - Other methods of transmission:
    - some cases from contaminated food and water
    - possible dispensation as an aerosolized bacteria
- **Symptoms**
  - Fever, chills, headache, muscle aches, joint pain, dry cough and chest pain
  - May cause skin ulcers, swollen and painful lymph glands, inflamed eyes, sore throat, oral ulcers or pneumonia
- **Treatment**
  - Initiate antibiotic treatment as soon as possible (Doxycycline or Cipro)

Smallpox

An often fatal disease caused by the variola virus:

- **Transmission**
  - Smallpox is highly contagious
  - Close contact with infected person spreads the disease
  - May be spread by aerosolized virus
- **Symptoms**
  - High fever, fatigue, and backache, followed by rash on face, throat & mouth spreading to hands, limbs, & chest
  - Lesions fill with pus and crust in second week
  - Scabs develop and fall off after 3-4 weeks
- **Treatment**
  - Isolate or quarantine infected persons
  - Administer smallpox vaccine within four days of exposure to be effective as a preventive measure

Category Descriptions

- **Category B Agents**
  - Second highest priority agents
  - Moderately easy to spread
  - Result in moderate illness rates and low lethality
  - Require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.
    - Examples: Ricin, Food and Water Safety Threats

Source: CDC

Category Descriptions

- **Category C Agents**
  - Third highest priority agents
  - Include emerging pathogens that could be engineered for mass dissemination in the future
  - Potential for high illness and lethality rates and major health impact
  - Include emerging infectious disease threats such as Nipah virus and Hantavirus

Source: CDC

What is an Aerosol?

- An aerosol is a suspension of liquid droplets or small particles in the air
- To be effective, an aerosolized biological agent (i.e. bioaerosol) must be of the right size so that the particles will remain suspended in the air and that the particles will be inhaled into the lower lungs where infection takes place

Delivery Systems

- Any device that can produce an effective aerosol can be fashioned into a BW delivery system:
  - Bombs/bomblets
  - Aircraft with spray tank
  - Truck-mounted sprayer
  - Crop duster
  - ABC fire extinguisher
  - Can of underarm deodorant

What makes a BW attack Different?

- A BW attack will likely be covert – an attack will not be realized until symptoms begin to appear in victims – usually days to weeks after the attack
- Awareness of what has occurred will develop slowly:
  - Where did the attack occur?
  - Who was exposed?
  - What was the agent?
- Chemical/explosive attacks manifest themselves immediately

Biological Terrorism General Guidance

Diagnosis: Be Alert to the Following-

- Groups of individuals becoming ill around the same time
- Sudden increase of illness in previously healthy individuals
- Sudden increase in non-specific illnesses
- Simultaneous disease outbreaks in human and animal or bird populations
- Unusual temporal or geographic clustering of illness

- Visit our training intranet site: http://portal.mcgov.org/content/hhs/PHS/Emer_Prep_Bio.htm
- Visit our APC site: http://www.montgomerycountymd.gov/hhstmpl.asp?url=/content/hhs/phs/APC/index.asp
- Video presentation

Module III

Communications with the public in times of public health emergencies

Objectives–

- State key principles in communicating with the public in the event of a biological attack/happening
- Describe the public's reactions/responses to a potentially life threatening biological event

Risk Communication

What is risk communication?

- A two-way activity
- Based on mutual respect and trust

What is the goal of risk communication during a crisis event?

We want the public to be:

- informed
- concerned
- aware
- calm

What about panic?

Definition of panic:

A sudden overpowering fright; a misapprehension of danger

Key factors in risk communication

- Know your public
- Know what their concerns are
- How they perceive risk
- Whom they trust

Risk Perception

Perception of risk is often very different than ***actual*** risk

Risk Perception

Risk perception = Actual risk + Fear

In a crisis, how can we bring the public's ***perception*** of the risk closer to the ***actual*** risk?

Ways to bring public's perception of risk closer to actual risk:

- Show genuine concern about people's safety
- Be knowledgeable as possible about the event
- Share useful information
- Show that the situation is under control

Principles to establish credibility and trustworthiness

- Give accurate and timely information that is consistent with messages issued by the state and local agencies
- Direct persons to sources who are knowledgeable about specific questions as necessary

Principles to establish credibility… cont.

- Assure public that more information will be shared as it becomes available
- Focus on what is being done rather than what is not being done

Principles to establish credibility… cont.

- Wear uniforms/gear that enhances public confidence as appropriate
- Use appropriate body language
- Avoid the use of negative words or jargon

Principles to establish credibility… cont.

- Be sensitive to cultural customs, taboos and myths
- Avoid premature assurance
- Be honest/establish empathy

Principles to establish credibility... cont.

- Listen to people's specific concerns

People often care more about:

- trust
- credibility
- competence
- empathy

than about statistics

Principles to establish credibility... cont.

Acknowledge the tragedy of injury rather than:

- Hide it
- Make light of it

Exercise in risk communication

Summary

Goals of Risk Communication:

- Inform the public of a crisis event
- Minimize panic/encourage calmness

Summary cont.

Communication Principles

- Give accurate and timely information
- Focus on what is being done rather than what is not being done
- Assure public that more information will be shared as it becomes available
- Avoid negative words/statements/jargon

Module IV
Individual and Family Preparedness

Objectives—

- List three ways to deal with stress
- Explain the steps to take to prepare one's family for a biological attack

Individual Preparedness

Taking Care Of Yourself

Basic Principles

- No one who sees a disaster is untouched by it
- It is normal to feel anxious about you and your family's safety
- Profound sadness, grief, and anger are *normal* reactions to an abnormal event

Basic Principles cont.

- Acknowledging our feelings helps us recover
- Focusing on our strengths and abilities will help you to heal
- Accepting help from community programs and resources is healthy
- We each have different needs and different ways of coping

Source: http://www.mentalhealth.samhsa.gov

Signs that might indicate the need for stress management

- Difficulty communicating thoughts
- Difficulty sleeping
- Easily frustrated
- Increased use of drugs/alcohol
- Limited attention span
- Poor work performance
- Headaches/stomach problems

Source: http://www.mentalhealth.samhsa.gov

Signs… cont.

- Disorientation or confusion
- Reluctance to leave home
- Depression, sadness
- Feelings of hopelessness
- Mood-swings
- Overwhelming guilt and self-doubt
- Fear of crowds, strangers, or being alone

Source: http://www.mentalhealth.samhsa.gov

Ways to deal with stress

- Talk with someone about your feelings
- Take steps to promote your own physical and emotional healing (i.e. healthy eating, rest, etc.)
- Spend time with family and friends
- Participate in memorials, rituals, and use of symbols as a way to express feelings

Source: http://www.mentalhealth.samhsa.gov

Ways to deal with stress cont.

- Use existing supports groups of family, friends, faith-based institutions, etc.
- *Need to seek professional assistance if self-help measures fail or if using drugs/alcohol to cope*

Source: http://www.mentalhealth.samhsa.gov

Introduction to Family Emergency Preparedness

Basic Principles of Family Preparedness

- All of us should be able to shelter in place **for at least 3 days** following an incident
- The time to prepare is **before** an incident occurs
- Requires open discussion with family members in advance about:
  - Family response planning
  - Your needed role as public health worker in a crisis

PLAN AHEAD so you can be available during an emergency

Who will care for your:

- Children
- House
- Pets
- Plants
- Mail
- Elderly parents, etc.

How to PROTECT Yourself and Your Family

The Plan:

Steps to Prepare for the Worst:

- Stock Up
- Get Together
- Communicate
- Stay Smart

Assembling Emergency Supplies

9 Essential Emergency Items

- Water
- Food (can items)
- Basic First Aid kit (which includes Band-Aids, gauze, and tape)
- 3-5 day supply of medications
- Flashlight with batteries
- AM/FM Radio with batteries
- Personal hygiene items (toilet paper, toothbrush, depends, etc.)*
- Clothing and Bedding
- Manual can opener

*glasses and hearing aids might also be necessary

Source: American Red Cross staff

Additional Considerations

Should also strongly consider bringing a disaster supply kit to work or leaving one in your car

Make a Family Communication Plan

Key Considerations

- Your family may not be together at home when an incident occurs
- Communication systems may be damaged or overwhelmed following a mass casualty event

Personal Calls

- Keeping your number of personal calls to a minimum is important in order to:
  - Reduce burden on the communications system
  - Increase efficiency of communication with family/friends in a crisis
  - Allow you to function more effectively in your public health emergency response roles

The Family Communication Plan: Key Elements

- Make sure everyone knows contact numbers and how to get in touch
- Keep a list of emergency numbers near the phone at all times
  - Include list of physicians/telephone numbers
- Identify an out-of-state "point of contact" to call in case of emergency
- Establish a family "phone tree" in advance

The Family Communication Plan cont.

- **Select a "safe room" in the home where everyone can gather**
  - Best choice: interior room above ground with few windows and doors
- **Be personally reachable during emergencies**
  - Home telephone
  - Cellular phone
  - Blackberry
  - Pager

Learning More about Readiness

Essential Planning Elements

- **Know** where to turn for information in a crisis
- **Understand** key health care issues following mass casualty incidents and how you can prepare yourself and your family for these issues
- **Consider** individuals with special needs

Information Sources in a Crisis: A Local Perspective

Tune to radio and television for alerts and periodic updates

Advance Planning

- **Things you should do:**
  - Keep 3 days of prescriptions on hand at all times
  - Have your insurance information available
  - Have immunization record handy
  - Know style and serial number of medical devices
  - List known food and drug allergies
  - Write down the health conditions of family

Important things to do following a mass incident

- Remain calm
- Be patient
- Listen carefully to information from public health authorities
- Implement personal/family preparedness communications plan
- Be accessible and ready to serve

For More Information

- American Red Cross Disaster Services http://www.redcross.org/services/disaster
- Centers for Disease Control and Prevention Public Health Emergency Preparedness and Response http://www.bt.cdc.gov
- Federal Emergency Management Agency "Are You Ready? A Guide to Citizen Preparedness" http://www.fema.gov/areyouready

Module V
County's Emergency Operation Plan

Objectives —

- State the purpose of an incident command system
- Give a general description of the roles of persons involved in setting up and operating medical dispensing sites

Mission During A Declared Disaster

Provide or assist in the provision of:

- Evacuation, Shelter and Mass Feeding
- Public Health Services to include mass immunizations or medication distribution
- Mental Health Services
- Disaster eligibility and referral to services

Clinic Staffing Needs

- Medicate/Vaccinate All Residents- 940,000
- Medicate/Vaccinate: 2-10 days
- Internal Staffing
  - 8 clinic sites: 800 Montgomery County government staff, including Recreation
  - Two 12 hour shifts= 24 hour operations
- Additional Staffing
  - Security, Transportation and Staging
  - Hotline, Active Daily Surveillance, and Isolation/Quarantine Issues

Staff Roles and Responsibilities

- **Triage/Registration Team Members**- Members triage patients and distribute registration forms and direct to next station.
- **Education Team Members-** Members conduct educational activities and help patients complete medical history forms and direct to next station.
- **Medical History Team Members-** Members review patient history for completeness and provide direction to appropriate station.

Staff Roles and Responsibilities cont.

- **Vaccine Medication Team Members-** Members assist and support medical dispensing and vaccination and conduct post education activities.
- **Logistics Team Members-** Provides support for clinic operations, i.e. supplies, record management/data entry and R&R for staff.
- **Data Entry Assistants-** Enter data into application and/or collect records.
- **Special Needs Assistants -** Members assist patients at assigned stations who need assistance navigating through the process.

Staff Roles and Responsibilities cont.

- **Runners**- Transmit information and supplies between stations.
- **Translators-** Provides assistance for patients needing translation in the clinic.
- **Mental Health Providers-** Offers assistance to patients in need of mental health support to navigate the clinic.
- **Transportation Assistants**- Provides help with patient flow at clinic site and staging areas.

Questions

- Public health threats ---What types of threats does the public face in the 21st century that require effective surveillance systems and massive resources?
- Dispensing/vaccination clinics ---What are three reasons for opening a dispensing/vaccination clinic in the event of a biological weapons attack?

Questions cont.

- Communication ---What are three principles of communication that you would use in implementing your role during a biological weapons attack?
- Family emergency response plan ---What steps would you take to prepare your family for a biological attack?

Questions cont.

- Roles ---What are some roles you might be asked to assume if there were signs of a biological attack in Montgomery County?
- Incident commander --- What is the primary function of the incident commander in the event of a biological attack?

Please fill out your evaluation and survey.
A special gift awaits you!

First Name, Last Name,

has participated in the educational activity entitled "_____"
in LOCATION on DATE

_____

Signed by
Title
Organization Name

_____

Signed by
Title
Organization Name

DVC Incident Command Chart

Frequently Used Phone Numbers

PHS Information Line	240- 777- 4200
PHS Emergency Preparedness & Response (Bio- Defense Team)	240- 777- 3038
PHS Disease Control	240- 777- 1755
Dennis Ave. Health Center	240- 777- 1790
Crisis Center	240- 777- 4000
Montgomery County Emergency Management	240- 777- 2300
Montgomery County Information Line	240- 777- 1000
National Response Hotline	800- 424- 8802
CDC Hotline	770- 488- 7100

HOMELAND SECURITY ADVISORY SYSTEM

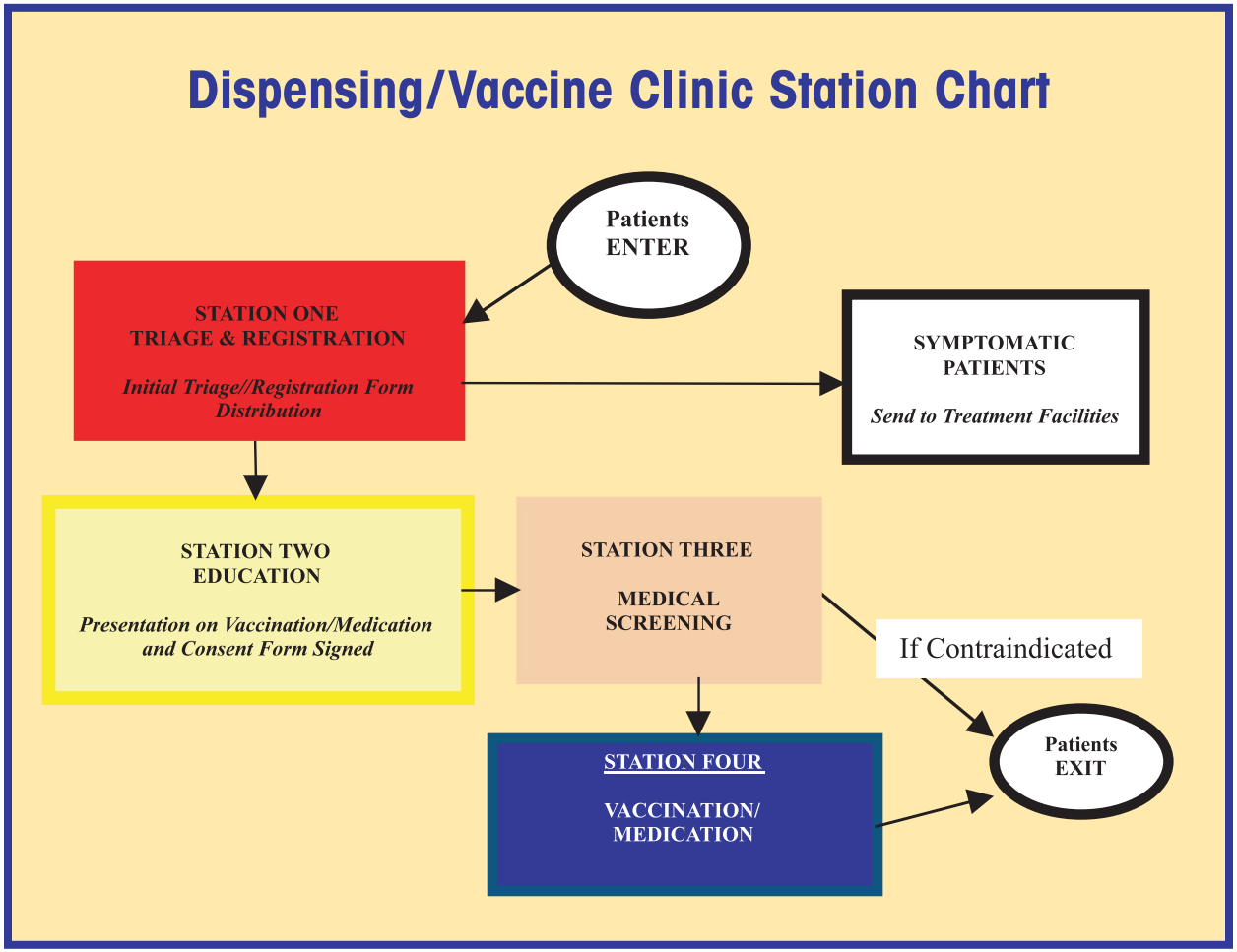
- SEVERE — SEVERE RISK OF TERRORIST ATTACK
- HIGH — HIGH RISK OF TERRORIST ATTACK
- ELEVATED — SIGNIFICANT RISK OF TERRORIST ATTACK
- GUARDED — GENERAL RISK OF TERRORIST ATTACK
- LOW — LOW RISK OF TERRORIST ATTACK

Public Health Services
Health & Human Services

Montgomery County Public Health Services

Mass Dispensing Pocket Guide

Dispensing/Vaccine Clinic Station Chart



THINGS TO REMEMBER:

Preparedness:

- Have emergency supplies on hand (water, food, clothing, flashlight, go-kit, radio, batteries, cash, etc.) at work and at home.
- Make a plan for your family to manage while you serve as a critical response provider.
- Arrange an out of state contact for you and your family.
- Be assured your family will be taken care of before the Dispensing Sites are open to the public.

Activation:

- Be sure to bring and wear your Montgomery County I.D. badge.
- Review your job action check list for your roles and responsibilities.
- Follow directions from your notification contact.

Which communications tools do you have, and which do you use?

	Have?	Use?
Dial-up email (modem)		
Always-on email (DSL, T1, T3)		
Fax machine		
Broadcast fax		
Hand-held digital assistants (e.g., Palm, Blackberry)		
Laptop computers		
Portable printers		
Wireless/cell phones		
Land lines		
Wireless email		
Conference phone		
Conference phone bridge		
Digital pager (numeric only)		
One-way alpha-numeric pagers		
Two-way radios (non-Nextel)		
Nextel alpha-numeric pagers		
Two-way alpha-numeric pagers		
High-frequency radios		
Translation services		

SAMPLE TRAINING EVALUATION

EVALUATION

1. Did the content of the training address the stated learning objectives?

   _____Completely _____Partially _____Not at all

   Comments:_____

   _____

2. What additional information would you like to see covered in our next training?

   ☐ More in depth information on conference topics (Topic(s)_____)

   ☐ More opportunity to practice/role play

   ☐ Additional topics covered (Topic(s) _____)

3. Please rate the presenters using the following scale

	Excellent	Good	Average	Below Average

4. On a scale of 1 – 5 (**1**=Strongly Disagree; 5=Strongly Agree) please rate the following:

The information I gained is (or will be) useful to me.	1	2	3	4	5
The information I gained was <u>new</u> to me.	1	2	3	4	5
The instructional methods/tools were effective.	1	2	3	4	5
I had sufficient opportunity to ask questions.	1	2	3	4	5
This training provided an opportunity for me to network with people that I usually do not have a chance to meet	1	2	3	4	5

5. How did you find out about this training (**please check all that apply**)?

   ☐ Email ☐ Supervisor recommended

   ☐ Coworker/colleague ☐ Other _____

6. Where would you like to participate in future trainings (**please check all that apply**)?

   ☐ Worksite ☐ At this site

   ☐ Offsite ☐ Not planning to attend in future

   Suggested sites:_____

7. Please tell us which method is the **MOST** desirable way for you to receive future trainings (**please check all that apply**):

- ❑ Distance learning
- ❑ Face to Face workshop format
- ❑ Web cast
- ❑ Videotape
- ❑ Videoconference
- ❑ Audiotape
- ❑ Teleconference
- ❑ CD ROM
- ❑ Other _____

8. What additional topics would you like for future trainings?

_____

_____

9. Would you recommend this training to your colleagues? YES NO (Please explain)

_____

_____

10. What degree of confidence do you have that you will apply your "new" learning in the work you do?

Check one: ___ 100% ___ 75% ___ 50% ____ 25% ____ 0%

11. Please list TWO ways that you will use the information from this conference to enhance the work that you do.

_____

_____

_____

_____

12. Please make any additional comments or suggestions.

_____

_____

_____

_____

_____

_____

_____

_____

_____

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MONTGOMERY COUNTY 17 76 MARYLAND

JOHNS HOPKINS CENTER For PUBLIC HEALTH PREPAREDNESS

APC Advanced Practice Centers

Ready Public Health Emergency Preparedness and Response MONTGOMERY COUNTY, MD Plan to be safe.